BUILDING
THE
OREGON
LOOM

detailed instructions
for making a loom at home
using hand tools
and easily obtained materials

DAVID MATHIESON

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LOOM

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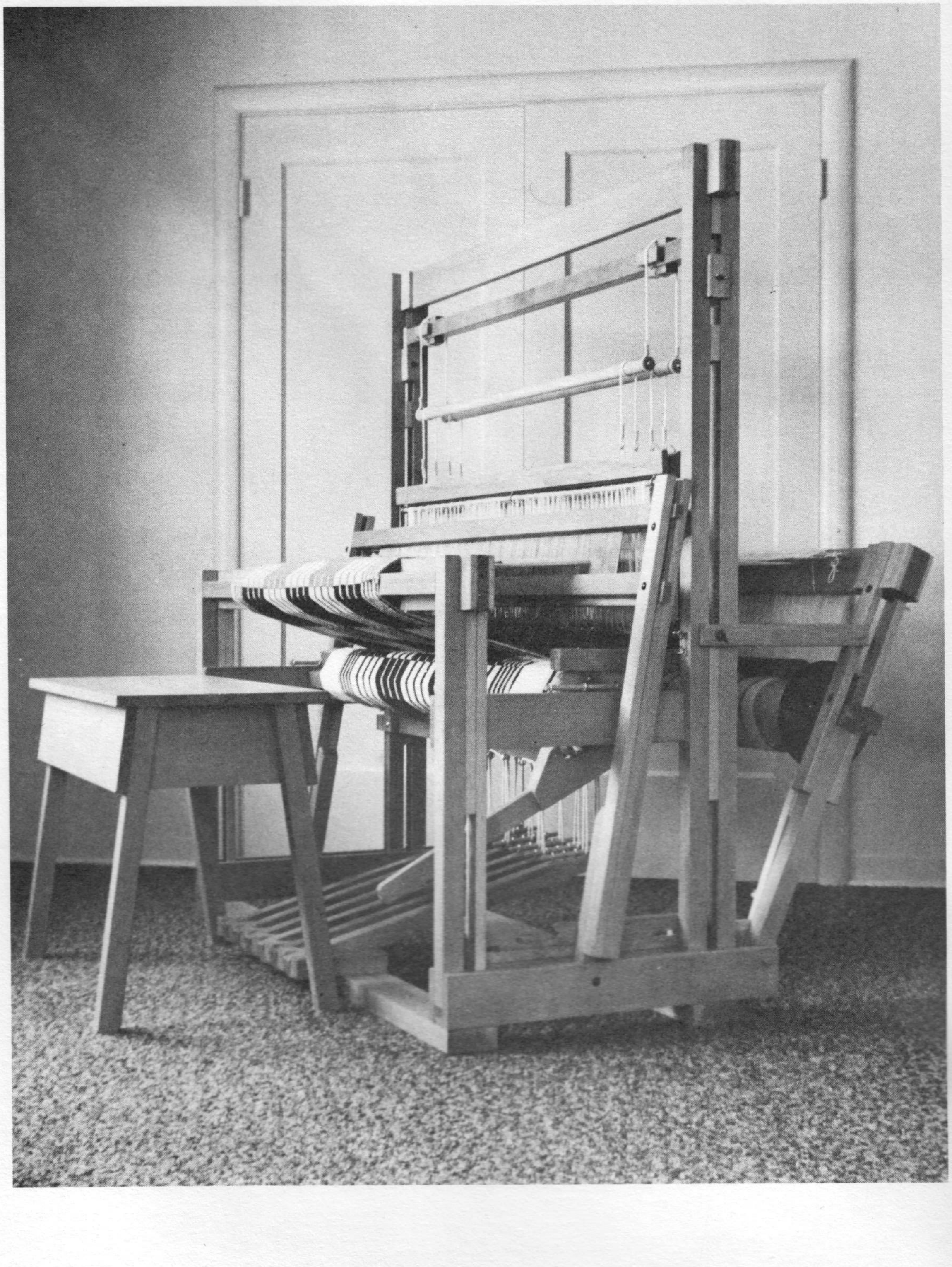
Published by
SERENITY WEAVERS
111 West Seventh
Eugene, Oregon 97401

Second Printing 1974
Third Printing 1974
Fourth Printing 1975
Fifth Printing 1977
Sixth Printing 1978



oregon loom

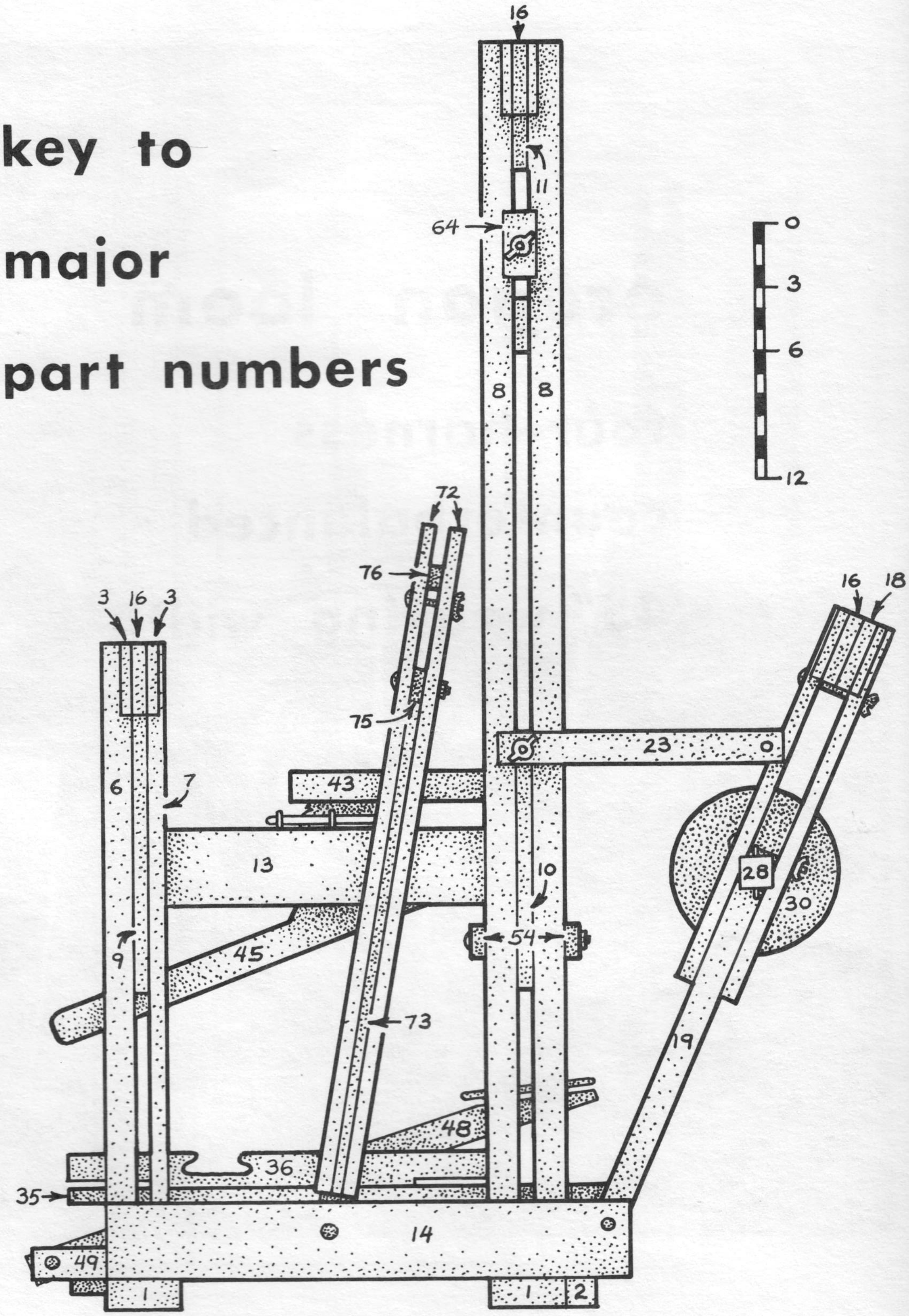
four harness

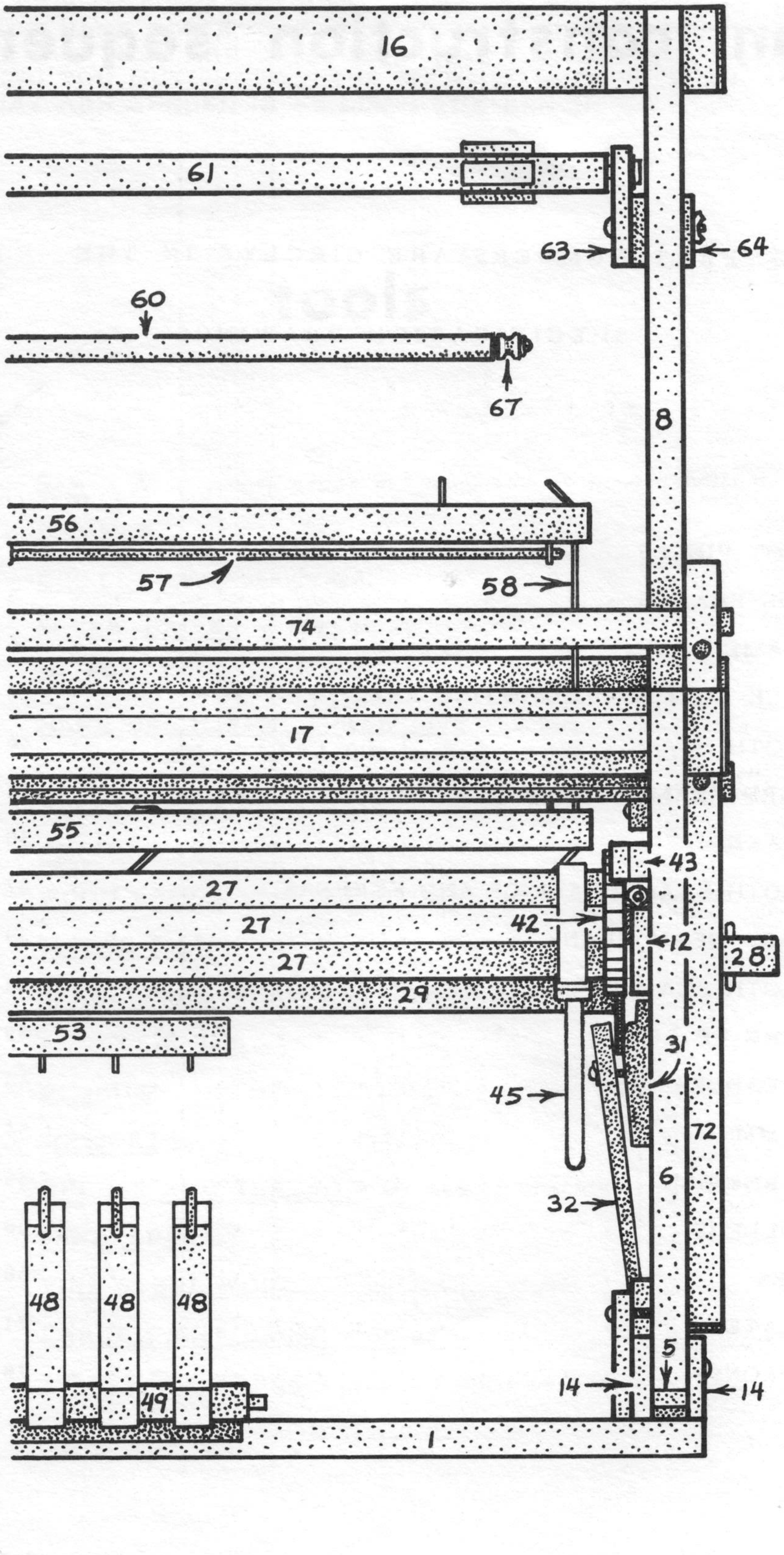
counterbalanced

45″ weaving width

photograph by
STEPHEN WENNSTROM

key to major part numbers





loom construction sequence

PART NUMBERS ARE CIRCLED IN THE SPECIFICATION DRAWINGS

	part number
FOOT PIECES	1
SIDE FRAMES	5
FRAME BEAMS	16
BACK POST AND ADJUSTING ARMS	19
CLOTH BEAM	26
WARP BEAM	28
BRAKE	30
CLOTH BEAM BEARINGS AND KEEPERS	37
WARP BEAM CRANK	39
CLOTH BEAM RATCHET AND PAWL	42
TAKE-UP LEVER	45
TREADLES	48
LAMMS	53
HARNESSES	55
ROLLERS	60
TIES	68
BEATER	71
APRONS	78

THE OREGON LOOM WAS DESIGNED SO THAT IT COULD BE BUILT WITH A MINIMUM OF HAND TOOLS. POWER TOOLS, USED CORRECTLY, WILL SPEED THE WORK BUT THEY ARE NOT ESSENTIAL. THE LIST BELOW INCLUDES EVERYTHING YOU MUST HAVE. THE ITEMS MARKED WITH AN ASTERISK ARE THOSE THAT ARE NEEDED IN BUILDING THE BENCH.

tools

* SAW - A 12 point, cross-cut hand saw in good condition.

* HAMMER

CHISEL - Well sharpened.

SCREW DRIVER - 1/4" tip.

PLIERS

* HAND DRILL WITH THREE BITS - 1/16", 1/8", 1/4".
(Only the 1/16" bit is needed for the bench.)

CARPENTER'S BRACE WITH THREE WOOD BITS - 3/8", 1/2", 9/16".

* FRAMING SQUARE

* WOOD RASP - Fine toothed, half-round cross section.

METAL FILE

* STEEL TAPE MEASURE

POCKET KNIFE

* PENCILS

SCISSORS

NEEDLE AND THREAD - Or sewing machine.

* SANDPAPER

* FINE STEEL WOOL

* LARGE PAINT BRUSH - 3" or larger.

* 2'x3' WORK TABLE - The top must be perfectly flat.

SELECTION OF LUMBER FOR BUILDING THE LOOM STARTS, FIRST OF ALL, WITH THE SPECIES OF TREE FROM WHICH THE LUMBER IS CUT. EXCEPT FOR THOSE PARTS WHERE MAPLE IS NEEDED, DOUGLAS FIR, WHICH IS ALSO KNOWN AS "OREGON PINE", IS THE WOOD RECOMMENDED. IF THAT IS NOT AVAILABLE, THE ONLY GOOD SUBSTITUTE IS A VARIETY THAT IS EQUAL TO DOUGLAS FIR IN HARDNESS AND RESISTANCE TO SPLITTING.

PURCHASE ONLY FIRST QUALITY LUMBER. THIS WILL COST MORE THAN THE COMMON GRADE USED IN CONSTRUCTION, BUT A WEAVER'S PRIMARY TOOL MUST BE FREE OF SPLINTERS AND PITCH. IN ORDERING, SPECIFY CLEAR, KILN-DRIED, VERTICAL GRAIN LUMBER. THIS MEANS THAT MOST OF THE WORK OF SELECTION HAS ALREADY BEEN DONE, LEAVING ONLY A FEW THINGS FOR YOU TO CHECK OVER. WATCH FOR OBVIOUS DAMAGE, WARPING, AND PITCH LINES. THESE LAST ARE THIN, DARK CREVICES RUNNING WITH THE GRAIN WHICH USUALLY BETRAY THE EXISTENCE OF A RESERVOIR OF PITCH HIDDEN INSIDE THE WOOD.

lumber for bench

1 - 8' LENGTH OF 2"x2"

1 - 7' LENGTH OF 1"x6"

1 - 6' LENGTH OF 1"x8"

lumber for loom

8 - 10' LENGTHS OF 1/2"x1 1/2"

THIS IS FREQUENTLY ONLY OBTAINABLE AS "DOOR STOP" WHICH MEASURES 1/2"x1 5/8". DOOR STOP IS ACCEPTABLE, AS IS "BULL NOSED DOOR STOP" WHICH IS THE SAME MATERIAL WITH ONE CORNER ROUNDED.

7 - 12' LENGTHS OF 1"x2" (3/4"x1 1/2")

IMPORTANT: THE MEASUREMENT GIVEN IN PARENTHESES IS THE ACTUAL SIZE OF THE KILN-DRIED STOCK. THE LUMBER MUST BE THE SIZE GIVEN IN PARENTHESES.

7 - 5' LENGTHS OF 1"x4" (3/4"x3 1/2")

12 - 10' LENGTHS OF 2"x2" (1 1/2"x1 1/2")

1 - 12' LENGTH OF 2"x4" (1 1/2"x3 1/2")

10 - 4' LENGTHS OF 3/8" DIAMETER MAPLE DOWEL

5 - 4' LENGTHS OF 1/2" DIAMETER MAPLE DOWEL

2 - 4' LENGTHS OF 1" DIAMETER MAPLE DOWEL

1 - 3' LENGTH OF 1"x8" MAPLE (3/4" THICK)

IN ADDITION TO THE THREE LENGTHS OF DOUGLAS FIR MENTIONED ON THE OPPOSITE PAGE, THE BENCH WILL ALSO NEED THOSE MATERIALS IN THE FOLLOWING LISTS THAT ARE MARKED WITH AN ASTERISK.

hardware

NAILS

1 BOX OF 1/2" CARPET TACKS
1 BOX OF 3/4" BRADS
1 POUND OF 3^{d} FINISH NAILS (bright)
* 1 POUND OF 6^{d} " " "

CEILING HOOKS

8 - #12
4 - #10

1/4" BLACK FINISH CARRIAGE BOLTS

8 - 2 1/2" LONG
8 - 3 1/2" LONG
2 - 4" LONG
1 - 5 1/2" LONG

WASHERS

36 - 1/4"
4 - 3/8"

SCREW EYES

Check to be sure that the eye will fit around a 3/8" dowel.

64 - #10

ROUND HEADED WOOD SCREWS

10 - 1 1/2" LONG #12
7 - 2" LONG #10
1 - 3" LONG #12

FLAT HEADED WOOD SCREWS

4 - 1 1/4" LONG #6

1/4" NUTS

Threaded to fit the bolts.

9 - STOVE OR HEX. HEADED NUTS
10 - WING NUTS

3/8" MACHINE BOLTS

2 - 2 1/2" LONG

SMALL SCREEN DOOR LATCH

(HOOK AND EYE)

miscellaneous materials

A BUILDING SUPPLY OR PAINT STORE CAN SUPPLY:

* 1 - 8 OUNCE SQUEEZE BOTTLE OF WHITE FURNITURE GLUE
(The bench needs only a small bottle.)

* TWO QUARTS OF "DEFT" (INTERIOR, SEMI-GLOSS)
(A pint would be enough for the bench.)

A VARIETY STORE SUCH AS WOOLWORTH'S CAN SUPPLY:

4 - 50 YARD BALLS OF COATS AND CLARKS SPEED-CRO-SHEEN (natural)

30' OF #4 1/2 DIAMOND BRAID VENETIAN BLIND CORD

25' OF #3 DIAMOND BRAID TRAVERSE CORD

A DRY GOODS STORE CAN SUPPLY:

2 1/2 YARDS - 45" WIDTH, OF DUCK (natural, unbleached)

AN AUTO SUPPLY STORE WILL SELL:

8 - 36" LENGTHS OF WELDING ROD, 1/8" DIAMETER

A WEAVING SUPPLY STORE SHOULD HAVE:

1 - 45" REED OF THE DENTAGE DESIRED BY THE WEAVER. REEDS OF 12 DENTS PER INCH HAVE BEEN CONSIDERED STANDARD FOR A LONG TIME, BUT LOWER DENTAGES SUCH AS 10 OR 8 ARE BECOMING POPULAR WITH THE INCREASED USE OF COARSER YARNS.

IF THERE IS NO WEAVING SUPPLY STORE NEAR YOU, 45" REEDS IN 8, 10 AND 12 DENT SIZES MAY BE PURCHASED BY MAIL FROM SERENITY WEAVERS. FOR A PRICE LIST WRITE TO:

SERENITY WEAVERS
111 WEST SEVENTH
EUGENE OREGON 97401

THE REED IS THE LAST ITEM PLACED ON THE FINISHED LOOM, AND IT IS NOT NEEDED IN ANY OF THE PROCESSES OF CONSTRUCTION.

A CABINET SHOP OR FRAMING STUDIO MIGHT BE ABLE TO SUPPLY YOU WITH:

1 - 8"x8" SCRAP OF 1/4" THICK TEMPERED MASONITE. IF NOT, A PIECE OF 1/4" MAPLE PLYWOOD WOULD SERVE. THIS ITEM WILL BE USED TO MAKE part 30 AND, IF YOU WISH, A METAL SHOP COULD MAKE THE PART FROM 1/4" ALUMINUM STOCK TO THE SPECIFICATIONS GIVEN FOR part 30 IN THE SECTION DESCRIBING THE BRAKE.

YOU WILL ALSO NEED:

2 - OLD LEATHER BELTS

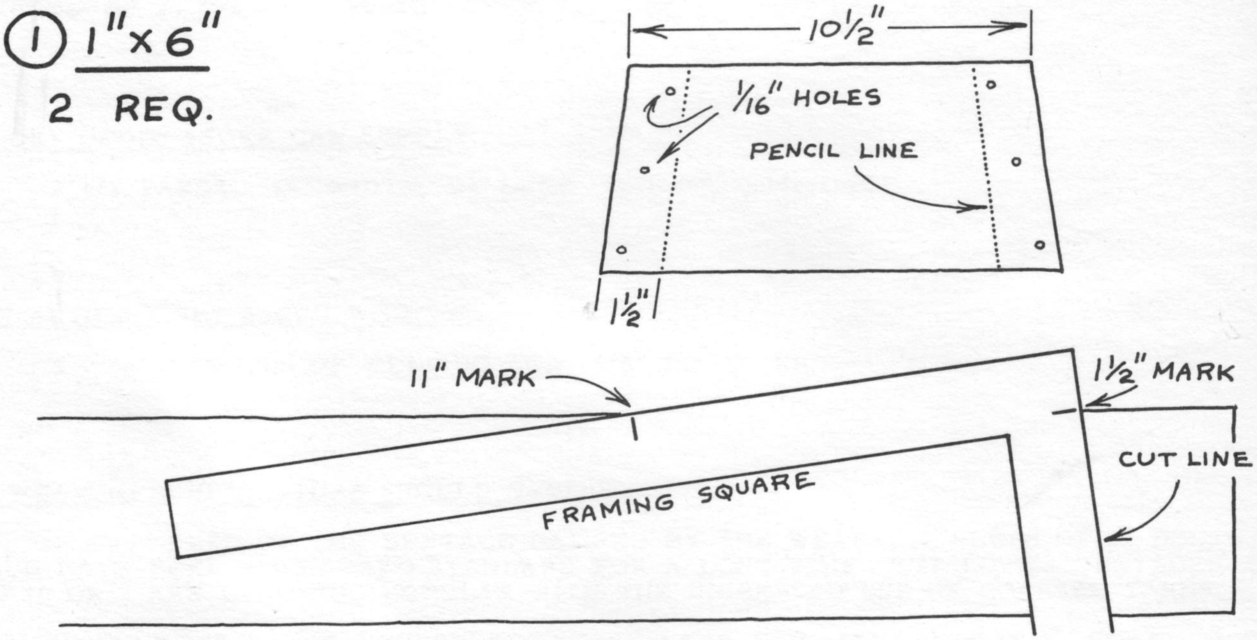
1 - EVAPORATED MILK CAN (empty)

1 - HANDFUL OF WOODEN KITCHEN MATCHES

instructions for building a weaving bench

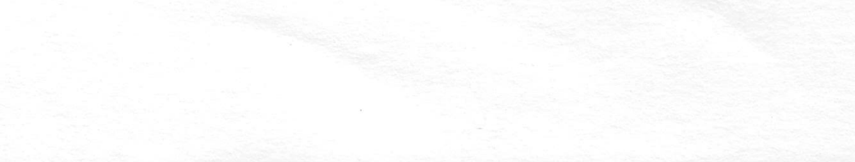
① 1"×6"

2 REQ.

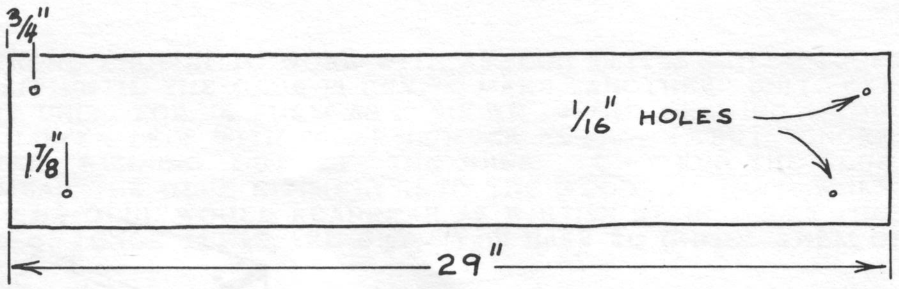


② 2"×2"

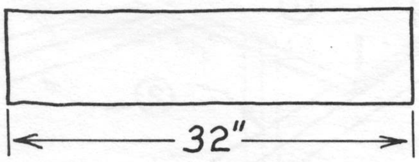
4 REQ.



③ 1"x6"
2 REQ.



④ 1"x8"
2 REQ.



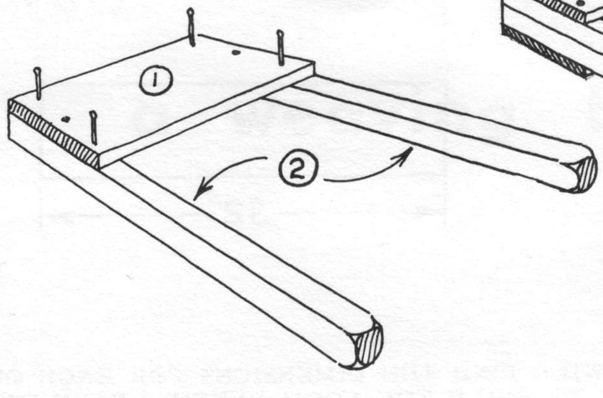
IN THE DRAWINGS ABOVE, YOU WILL FIND THE DIMENSIONS FOR EACH OF THE FOUR TYPES OF PIECES THAT ARE NEEDED TO BUILD THE LOOM BENCH. EACH PIECE HAS A PART NUMBER THAT IS CIRCLED. THE LUMBER SIZE FROM WHICH THE PART IS CUT IS INDICATED BY AN UNDERLINED NUMBER. WHEN THE ABBREVIATION REQ. FOLLOWS A NUMBER, THIS SHOWS HOW MANY PIECES OF THAT TYPE ARE REQUIRED.

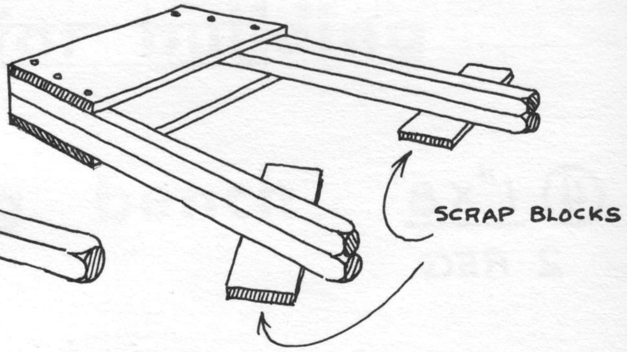
IN MAKING THE TWO part 1's, CAREFULLY MEASURE OUT THE SIDES OF THE TRIANGLE USED TO FIND THE ANGLE OF THE CUT AND MARK YOUR CUT LINE AT THE VERY END OF THE 1"x6". USE A VERY SHARP PENCIL AND THE FRAMING SQUARE. AFTER THIS, CONTINUE THE CUT LINE DOWN EACH OF THE TWO EDGES OF THE PLANK MAKING SURE THAT THIS IS A PERFECT RIGHT ANGLE BY USING THE SQUARE TO MARK THE LINE. THIS TECHNIQUE OF MARKING THREE SIDES OF THE PLANK BEFORE CUTTING WITH THE HAND SAW GIVES A GOOD GUIDE FOR MAKING A VERTICAL SAW CUT AND SHOULD BE USED WITH ALL OF THE SAW LINE MARKINGS FOR BOTH THE LOOM AND THE BENCH. ONCE THE SECOND ANGLED CUT IS MADE, FORMING THE FIRST part 1, USE THIS FIRST PIECE TO HELP MARK THE SECOND part 1 SO THAT THE TWO ARE EXACTLY THE SAME SIZE.

DRILL THE THREE 1/16" HOLES IN THE END OF EACH part 1. IF YOU WILL LOOK CLOSELY AT THE DRAWING YOU WILL SEE THAT THESE HOLES ARE STAGGERED IN ECHELON SLIGHTLY. THIS IS SO THAT WHEN THE 6^{d} NAILS ARE HAMMERED THROUGH THEM AND INTO THE 2"x2" LEG PIECE (part 2) THE NAILS WILL NOT SPLIT THE 2"x2" BY GOING INTO THE SAME LINE OF GRAIN. AFTER THE HOLES ARE DRILLED, SMOOTH DOWN THE SPLINTERS WITH SANDPAPER FOR SAFETY. DON'T WORRY ABOUT THE FINISH OF THE ENDS OF THESE PIECES AS THEY WILL BE BURIED IN GLUE.

THE FOUR part 2 PIECES, OR LEGS, HAVE THE SAME ANGLE OF CUT AS THE part 1's. REMEMBER THAT THE ANGLE GOES THE SAME WAY EACH TIME, INSTEAD OF BEING REVERSED, AS IT WAS IN MAKING THE part 1's. WHEN YOU CUT THE part 2's OUT OF 2"x2" USE THE SAME TECHNIQUE FOR INSURING ACCURACY—THE FIRST ONE CUT GIVES THE SIZE FOR ALL THE OTHERS. AFTER SAWING, YOU CAN ROUND THE CORNERS OF ONE END OF EACH LEG WITH THE WOOD RASP. DO AN EVEN JOB SO THAT EACH LEG HAS A CIRCULAR "FOOTPRINT".

THE PIECES NUMBERED 3 AND 4 NEED ONLY RIGHT ANGLED SAW CUTS BUT SHOULD BE JUST AS ACCURATE IN LENGTH AS THE OTHER PIECES. REMEMBER TO USE SQUARE AND PENCIL TO MARK THE EDGES. Part 3's HAVE TWO 1/16" HOLES DRILLED IN EACH END AND WHEN THIS IS DONE, USE RASP AND SANDPAPER ON THE ENDS OF BOTH 3's AND 4's. TAKE SOME TIME AND SMOOTH THE END GRAIN WELL. A MINUTE OR TWO OF HARD SANDING ON EACH END WILL BE WELL REWARDED IN THE APPEARANCE OF THE FINISHED BENCH. AFTER THE FLAT SURFACE OF EACH END IS SMOOTH, ROUND OFF THE FOUR EDGES SLIGHTLY.





TO START ASSEMBLING THE BENCH, TAKE TWO part 2's AND PLACE THEM ON THE WORK TABLE AS THEY ARE IN THE DRAWING, WITH A part 1 ON TOP. BEFORE PLACING THE part 1, TAKE FOUR 6^d NAILS AND TAP THEM INTO THE CORNER HOLES UNTIL THE POINTS ALMOST PROJECT ON THE OTHER SIDE. ARRANGE A part 1 AND TWO part 2's AS SHOWN IN THE LEFT HAND DRAWING, MAKING SURE THAT THE EDGES WHERE TWO PIECES OVERLAP ARE ABSOLUTELY SQUARE. TO DO THIS, TAKE A SCRAP BLOCK OF LUMBER AND PRESS IT AGAINST THE VERTICAL SURFACES FORMED BY THE TWO PIECES UNTIL THEY ARE ALINED. ONCE THIS IS DONE, WEIGHT OR CLAMP ALL OF THE PIECES TO HOLD THEM IN PLACE.

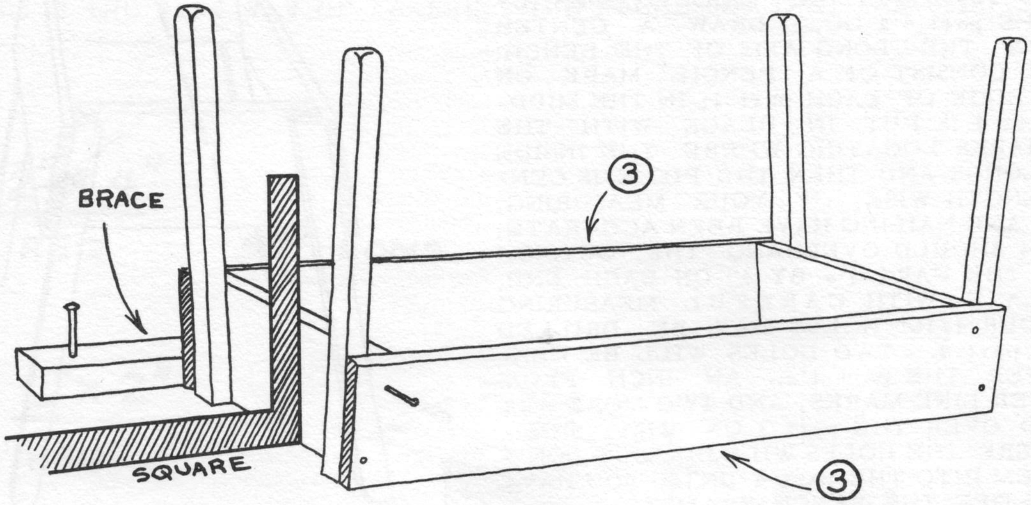
AFTER EVERYTHING IS LINED UP, TAKE YOUR HAMMER AND TAP THE NAILS INTO THE part 2's A SIXTEENTH OF AN INCH, SO THAT WHEN THE NAILS AND THE part 1 ARE LIFTED OFF AND GLUE SPREAD ON THE part 2's YOU WILL BE ABLE TO RE-POSITION EVERYTHING BY SLIPPING THE NAIL POINTS BACK INTO THE DENTS THEY HAVE MADE. THIS TECHNIQUE OF PARTIALLY NAILING, TAKING THE PIECES APART, SPREADING THE GLUE AND THEN RE-NAILING IS THE WAY ALMOST EVERYTHING IS PUT TOGETHER IN BUILDING BOTH THE BENCH AND THE LOOM. IT IS MUCH EASIER TO POSITION THE PIECES DRY. ONCE THERE IS GLUE BETWEEN THEM IT IS LIKE TRYING TO ALINE TWO BARS OF WET SOAP.

BEFORE TAKING THE part 1 OFF, DRAW A LIGHT PENCIL LINE ON THE part 2's WHERE THE UPPER PIECE CROSSES THEM. THIS WILL TELL YOU HOW FAR TO SPREAD THE GLUE BEING APPLIED ON THE part 2's. YOU WILL WANT AN EVEN COAT OF WET GLUE, BUT DON'T SPREAD SO MUCH THAT IT WILL SQUEEZE OUT WHEN THE JOIN IS MADE.

AFTER THE GLUE IS ON THE part 2's, AND part 1 IS BACK IN PLACE, DRIVE THE NAILS THE REST OF THE WAY, AND ADD TWO MORE NAILS IN THE HOLES REMAINING. THE PIECES WILL BE HELD TIGHTLY TOGETHER IF YOU HAMMER THE NAIL HEADS FLUSH WITH THE SURFACE.

YOU SHOULD BE PRACTICING THE TECHNIQUE OF DRIVING A FINISH NAIL HOME WITHOUT DENTING THE WOOD. IN MOST CASES THE SMALL CRATER MADE BY A MISDIRECTED HAMMER HEAD WOULD DEFINITELY DETRACT FROM THE FINISHED APPEARANCE.

THE LEG UNIT IS STRONG ENOUGH TO WORK WITH AS SOON AS IT IS NAILED TOGETHER. YOU DO NOT NEED TO WAIT UNTIL THE GLUE IS DRY. MAKE ANOTHER UNIT EXACTLY LIKE IT, USING THE FIRST UNIT FOR A FORM AS IS SHOWN IN THE DRAWING. YOU WILL NEED TO BLOCK UP THE LOWER LEGS WITH SCRAP LUMBER AS SHOWN, BUT IGNORE ANY BEADS OF GLUE THAT START RUNNING OUT OF THE JOINS. DON'T RUB THE GLUE OFF. RUBBING WOULD ONLY SMEAR THE GLUE INVISIBLY INTO THE WOOD, SO THAT WHEN THE WOOD FINISH IS APPLIED THE GLUE WOULD REAPPEAR AS WHITISH STAINS. LET THE GLUE RUN AND HARDEN AS BEADS. ONCE THESE ARE DRY, IT IS EASY TO CHISEL THEM OFF.

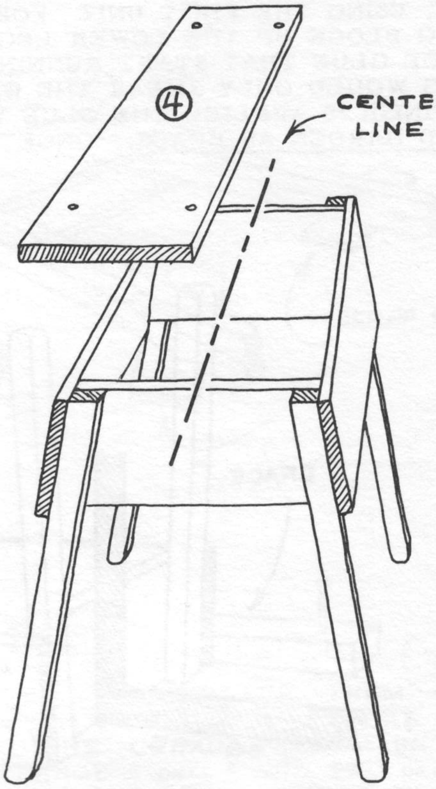


THE part 3's ARE POSITIONED, GLUED AND NAILED WITH THE LEG UNITS UPSIDE DOWN ON THE WORK TABLE. THIS IS SO THAT THE part 3's, WHICH ARE CANTED IN RELATION TO THE BENCH SEAT AND MAKE CONTACT WITH IT ONLY ALONG ONE NARROW EDGE, WILL BE CERTAIN TO BE BUTTED UP TO THE SAME PLANE AS THE part 1's. THIS PLANE IS NOW REPRESENTED BY THE TOP OF YOUR WORK TABLE.

ONCE YOU HAVE UNDERSTOOD HOW THE part 3's MUST BE POSITIONED IN RELATION TO THE LEG UNITS YOU CAN ALINE, GLUE, AND NAIL THE part 3's TO THE LEG UNITS. USE THE TABLE TOP AS YOUR ALINEMENT TOOL AND CHECK WITH THE SQUARE TO BE SURE THAT THE LEG UNITS ARE VERTICAL TO THE TABLE TOP. IN NAILING, IT WOULD HELP TO HAVE A BRACE NAILED TO THE TABLE TOP IN ADVANCE. THEN THE FRAME ON WHICH YOU ARE WORKING WILL HAVE SOMETHING TO BACK IT UP AND WON'T GO SLIDING AROUND WHEN YOU USE THE HAMMER. REMEMBER THAT THE part 1's GO ON THE INSIDE OF THE BENCH FRAME.

WHEN ALL FOUR GLUE JOINTS BETWEEN THE part 3's AND THE LEG UNITS HAVE BEEN NAILED TOGETHER THE FRAME OF THE WEAVING BENCH WILL HAVE BEEN COMPLETED. IT SHOULD LIE FLAT ON THE TABLE TOP WITH ALL FOUR EDGES OF THE RECTANGLE TOUCHING THE SURFACE. WHEN YOU TURN THE FRAME RIGHT SIDE UP THE LEGS SHOULD ALL TOUCH. ROTATE THE BENCH FRAME SLOWLY, TESTING IT FOR WOBBLING AT EACH POINT OF THE COMPASS. THIS WILL HELP TO COMPENSATE FOR ANY IRREGULARITIES IN THE SURFACE YOU ARE USING FOR THE TEST. IF THE GLUE JOINTS NEED CHANGING, NOW IS THE TIME FOR IT — BEFORE THE GLUE DRIES. HOWEVER, IF IT IS SIMPLY A MATTER OF ONE LEG BEING SLIGHTLY LONGER THAN THE OTHERS, THE BEST COURSE WOULD BE TO LET THE GLUE DRY AND THEN SHORTEN THE LEG WITH THE RASP.

WHEN THE BENCH FRAME IS COMPLETED AND STANDING UPRIGHT, YOU WILL PROBABLY BE ABLE TO VISUALIZE FAIRLY CLEARLY WHERE THE part 4's GO. DRAW A CENTER LINE DOWN THE LONG AXIS OF THE BENCH. THIS WILL CONSIST OF A PENCIL MARK ON THE TOP EDGE OF EACH part 1; IN THE MIDDLE. A part 4 IS PUT IN PLACE WITH THE PENCIL MARKS LOCATING WHERE THE INSIDE EDGE BELONGS AND THEN THE PIECE IS CENTERED LENGTH WISE. IF YOUR MEASURING, SAW CUTS AND NAILING HAVE BEEN ACCURATE, THE part 4 SHOULD OVERHANG THE OUTSIDE EDGE OF THE PART 1's BY 3" ON EACH END. NOW LOCATE WITH CAREFUL MEASURING WHERE FOUR 1/16" HOLES MAY BE DRILLED INTO THE part 4. TWO HOLES WILL BE CENTERED OVER THE part 1's, AN INCH FROM THE CENTER LINE MARKS, AND TWO MORE ARE CENTERED OVER THE part 3 ON THAT SIDE . MARK WHERE THE HOLES WILL GO, BUT DON'T DRILL THEM INTO THE part 4 UNTIL YOU HAVE LIFTED IT OFF THE BENCH FRAME.



AFTER THE 1/16" HOLES ARE DRILLED, THE part 4 CAN BE PUT BACK IN POSITION AND 6^{d} NAILS TAPPED IN AS BEFORE. SPREAD GLUE EVENLY ON THE TOP EDGE OF THE part 1's AND OVER THE ENDS OF THE part 2's. THE GLUE IS USED IN A DIFFERENT WAY ALONG THE NARROW UPPER EDGE OF part 3 WHERE IT WILL COME IN CONTACT WITH THE SEAT. JUST RUN A LINE OF GLUE FROM THE SQUEEZE BOTTLE SPOUT ALONG THIS UPPER EDGE. AFTER NAILING, REPEAT THE PROCESSES WITH THE REMAINING part 4 AND THE WEAVING BENCH HAS BEEN CONSTRUCTED. TO GIVE IT A BEAUTIFUL, WAXY FINISH LIKE THAT FOUND ON HIGH QUALITY HARDWOOD TOYS BRUSH ON A HEAVY COAT OF "DEFT", SANDING WHEN DRY. GIVE THE SECOND COAT A RUBDOWN WITH FINE STEEL WOOL.

IN BUILDING THE WEAVING BENCH YOU WILL HAVE PERFORMED MOST OF THE OPERATIONS THAT ARE REQUIRED IN BUILDING THE LOOM, PLUS A FEW RATHER DIFFICULT ONES THAT BELONG TO THE BENCH ALONE. THE SUCCESSFUL COMPLETION OF THIS FIRST PROJECT IS A GOOD INDICATION THAT YOU WILL BE ABLE TO BUILD THE LOOM SUCCESSFULLY.

instructions for building the oregon loom

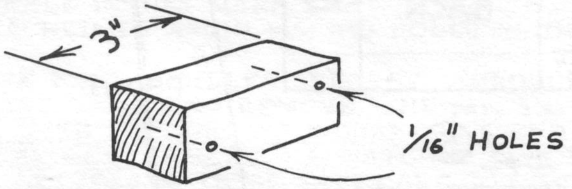
DO NOT BEGIN CONSTRUCTION OF THE LOOM BEFORE YOU ARE COMPLETELY FAMILIAR WITH THE WAY THE BENCH IS MADE. YOU ARE STRONGLY URGED TO CONSTRUCT THE BENCH FIRST. THIS IS THE BEST WAY OF LEARNING THE PROCESSES THAT ARE USED IN BUILDING THE LOOM.

① 2" X 4"

2 REQ. 57" LONG

② 2" X 2"

2 REQ.



③ 1/2" X 1 1/2"

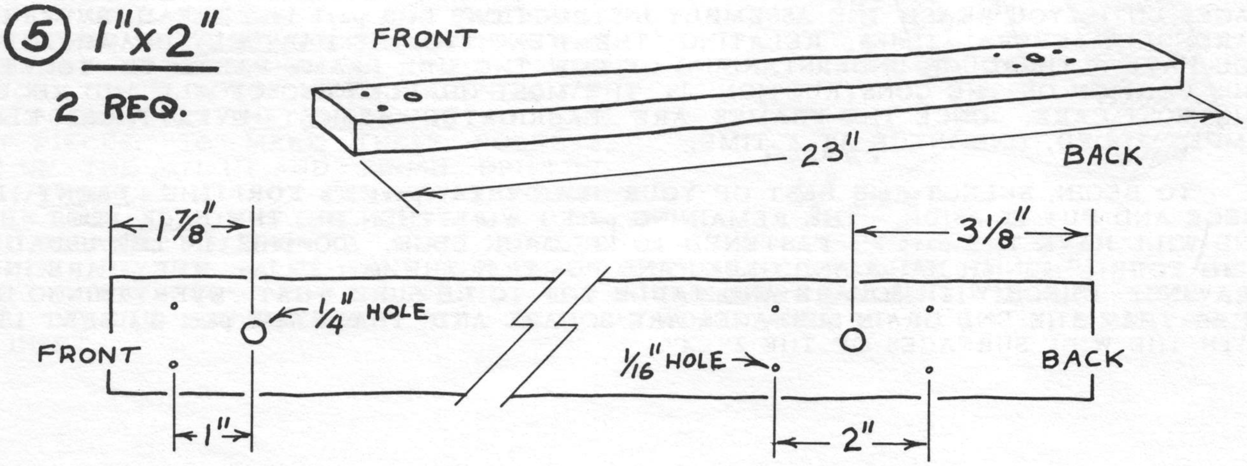
22 REQ. 3 1/2" LONG

④ 1/2" X 1 1/2"

2 REQ. 5" LONG

⑤ 1" X 2"

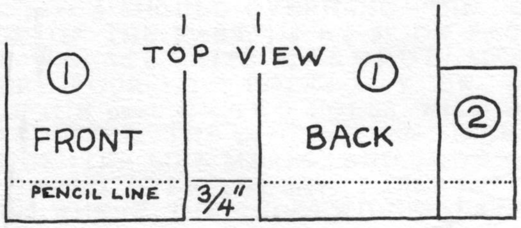
2 REQ.

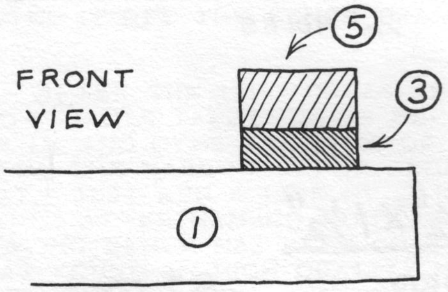


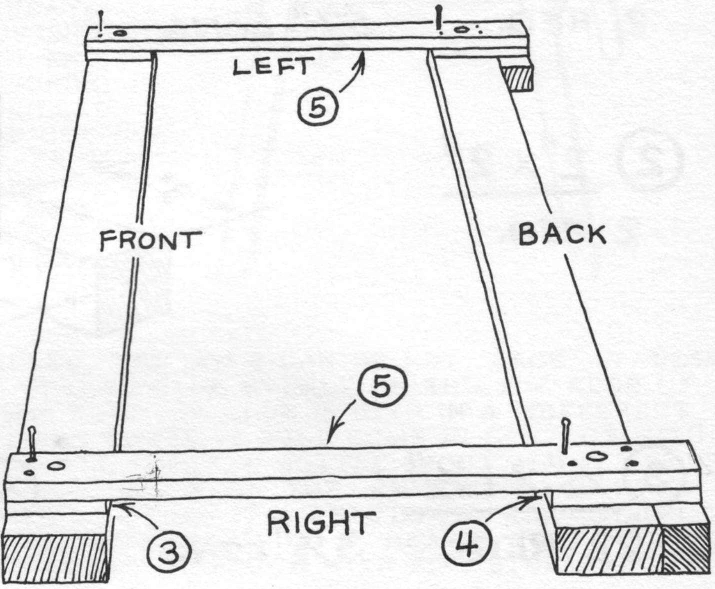
Part 1's FOR THE LOOM ARE CUT 57" LONG, AS INDICATED IN THE PART SPECIFICATION, AND THEIR ENDS ARE SANDED. DON'T RELY ON THE MILL CUT ENDS OF THE 2"x4" TO BE SQUARE. CHECK THESE OUT AND IF THEY AREN'T PERFECTLY SQUARE, SAW YOUR OWN CUT. DECIDE WHICH FLAT (3 1/2") SIDE OF EACH OF THE TWO part 1's HAS THE BEST SURFACE SO THAT YOU CAN MARK IT TOP LIGHTLY WITH A PENCIL.

MAKE THE TWO part 2's FROM 2"x2" AS SHOWN, COMPLETE WITH 1/16" HOLES. CUT OUT ALL TWENTY TWO part 3's FROM 1/2"x1 1/2" STOCK. IF YOU ARE USING DOOR STOP THAT IS WIDER THAN 1 1/2", SET TWENTY OF THEM ASIDE JUST AS THEY ARE. THEY WON'T BE NEEDED UNTIL LATER AND CAN BE USED IN THAT SIZE. THIS CAN NOT BE SAID OF THE TWO REMAINING part 3's WHICH MUST BE EXACTLY 1 1/2" WIDE, OR THE WIDTH OF THE part 5's. THE part 4's ARE 1 1/2" WIDE TOO, AND MUST BE SHAVED DOWN IF THE STOCK IS LARGER. YOU WILL END UP WITH FOUR PIECES MEASURING 1/2"x1 1/2" EXACTLY; TWO OF THEM 3 1/2" LONG (THE part 3's), AND TWO OF THEM 5" LONG (THE part 4's).

Part 5's SHOULD HAVE ALL THE 1/4" AND 1/16" HOLES DRILLED AS THEY ARE INDICATED IN THE DRAWING. PLACE THE 1/4" HOLES PRECISELY; THIS IS IMPORTANT! ALSO PENCIL MARK FRONT AND BACK ON EACH OF THE TWO PIECES.







BEFORE BEGINNING THE ASSEMBLY OF THE LOOM, READ ALL OF THE NEXT FEW PAGES UNTIL YOU REACH THE ASSEMBLY INSTRUCTIONS FOR part 14. READ EVERYTHING CAREFULLY SEVERAL TIMES, RELATING THE TEXT TO THE PART KEY DRAWINGS UNTIL YOU HAVE A THOROUGH UNDERSTANDING OF HOW THE SIDE FRAME PARTS GO TOGETHER. THIS PORTION OF THE CONSTRUCTION IS THE MOST CHALLENGING OF ALL AND REQUIRES THE MOST CARE. ONCE THE FRAMES ARE FABRICATED ALMOST EVERYTHING ELSE IS SIMPLY ADDED, ONE PIECE AT A TIME.

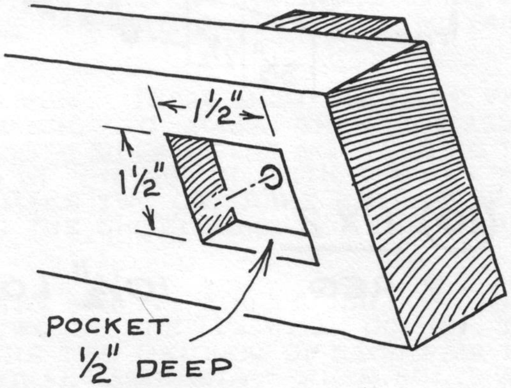
TO BEGIN; SELECT THE BEST OF YOUR TWO 2"x4" part 1's FOR THE FRONT FOOT PIECE AND PUT IT ASIDE. THE REMAINING part 1 WILL THEN BE THE BACK FOOT PIECE AND WILL HAVE THE part 2's FASTENED TO ITS BACK EDGE. DO THIS IN THE USUAL WAY WITH FOUR 6^d FINISH NAILS AND GLUE, AND POSITION THE part 2's AS THEY ARE IN THE DRAWING. CHECK WITH SQUARE AND TABLE TOP TO BE SURE THAT EVERYTHING LINES UP—THAT THE END GRAIN SURFACES ARE SQUARE AND THAT THE part 2's SEAT LEVEL WITH THE WIDE SURFACES OF THE 2"x4".

THE NEXT STEP IS TO DRAW ACCURATE GUIDE LINES 3/4" IN FROM THE ENDS OF EACH part 1. THESE PENCIL LINES ARE ON THE TOP SURFACE ONLY, CONTINUING OVER THE TOP OF THE part 2's IN THE CASE OF THE BACK part 1, AS YOU CAN SEE IN THE SKETCH. USE THE SQUARE, AS ALWAYS, IN DRAWING THE GUIDE MARKS SO THAT THEY ARE AT RIGHT ANGLES TO THE LONG AXIS OF THE LUMBER. WHEN THIS IS DONE, USE GLUE AND 3^d NAILS TO FASTEN part 3's TO THE FRONT PIECE, part 4's TO THE BACK. THE 3's AND 4's ARE LINED UP EXACTLY ON THE GUIDE LINES, WITH THEIR ENDS SQUARE WITH THE EDGES OF THE LARGER PIECES, AND THEIR OUTER SIDES 3/4" IN FROM THE BUTT ENDS. USE ONLY TWO NAILS PER PART AND PLACE THESE NAILS OUT NEAR THE ENDS, IN OPPOSITE CORNERS. IF THE MATERIAL THAT THE 3's AND 4's ARE MADE OF TENDS TO SPLIT, DRILL 1/16" HOLES PART OF THE WAY FIRST. USE A LOT OF GLUE.

FOUR 1/4" HOLES ARE NOW DRILLED THROUGH EACH 1/2" PIECE AND DOWN THROUGH THE 2"x4" UNDER IT. THE LOCATION OF EACH HOLE IS DETERMINED BY USING THE HOLES DRILLED IN THE part 5 PIECES AS A GUIDE. BEFORE USING THE DRILL, LAY OUT BOTH FOOT PIECES ON THE FLOOR WITH THE ENDS OF THE part 5's FITTING EVENLY ON TOP OF THE 3's AND 4's, AS IS PICTURED IN THE DRAWING. AFTER THE LARGE WOODEN RECTANGLE YOU HAVE MADE IS SQUARED UP, DRIVE FOUR TEMPORARY 3^d NAILS TO KEEP THE ENDS OF THE part 5's IN POSITION, USING SOME OF THE SMALL HOLES DRILLED INTO THE 5's. WEIGHT THE WHOLE FRAME DOWN SO THAT IT CAN'T MOVE AROUND AND CHECK EACH part 3 AND part 4 TO BE SURE THAT THERE IS PERFECT CONGRUITY ON THREE SIDES, WITH THE part 5 ABOVE IT.

IN USING THE 1/4" DRILL, PLACE THE BIT INTO THE HOLE ALREADY MADE IN THE part 5. DRILL ONLY A QUARTER INCH OR SO AT A TIME, DRAWING THE BIT OUT AND CLEARING IT OF SHAVINGS BEFORE CONTINUING. MEASURE THE LENGTH OF THE BIT. IF IT IS LONGER THAN TWO AND A HALF INCHES MARK THAT DISTANCE WITH TAPE. STOP DRILLING WHEN THE TAPE IS REACHED TO AVOID MAKING HOLES IN THE FLOOR.

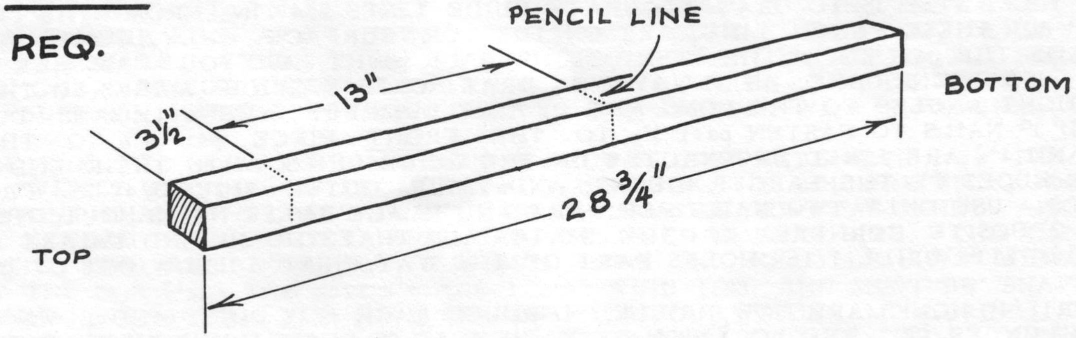
WHEN THE FOUR HOLES HAVE BEEN DRILLED NEARLY THROUGH THE part 1's YOU SHOULD PULL OUT THE TEMPORARY NAILS AND REMOVE THE part 5's. AS YOU DO THIS MARK EACH part 1 END ALONG WITH ITS CORRESPONDING part 5 END SO THAT YOU WILL NEVER BE DOUBTFUL ABOUT WHICH GOES WHERE. A MATCHES A, B MATCHES B. DON'T BE AFRAID TO USE GOOD CLEAR LETTERS AS THESE AREAS ARE GOING TO BE HIDDEN LATER ANYWAY. ALSO LABEL WHICH SIDE OF EACH part 5 GOES UP AND WHICH GOES DOWN. AND MOST IMPORTANT OF ALL, MARK ONE part 5 RIGHT AND THE OTHER part 5 LEFT IN EXACT ACCORDANCE WITH THE RIGHT AND LEFT DESIGNATIONS IN THE ABOVE DRAWING.



BY NOW, YOU WILL HAVE COME TO THE CONCLUSION THAT THE part 5's ARE IMPORTANT. THEY ARE, OR AT LEAST THEIR POSITIONING IS. THERE IS SOMETHING ELSE TO REMEMBER: THE part 5's ARE NEVER PERMANENTLY FASTENED TO THE FOOT PIECES, BUT ARE BUILT STRONGLY INTO THE SIDE FRAME STRUCTURE. CARRIAGE BOLTS ARE USED TO HOLD THE part 5's (AND THEIR SIDE FRAMES) TO THE FOOT PIECES SO THAT THE LOOM MAY BE DISASSEMBLED EASILY. THE NUTS TO THESE BOLTS ARE HIDDEN IN 1/2" DEEP POCKETS ON THE UNDERSIDE OF THE FOOT PIECES. TO MAKE THESE POCKETS, PICK UP THE part 1's AND FINISH DRILLING THE 1/4" HOLES ALL OF THE WAY THROUGH. WHERE THE BIT COMES OUT CENTER A PENCILED SQUARE, 1 1/2" ON A SIDE, AROUND EACH OF THE NEW HOLES. ONE SIDE OF EACH SQUARE SHOULD BE 3/4" FROM THE BUTT EDGE OF THE 2"x4". NOW CHISEL OUT THE FOUR SQUARE POCKETS, MAKING THEM 1/2" DEEP. SHOULD YOU HAVE A 1" BIT, OR A BIT ADJUSTABLE UP TO 1 1/2", SIMPLY DRILL THE INSET.

⑥ **2"x 2"**

2 REQ.



⑦ **1"x 2"**

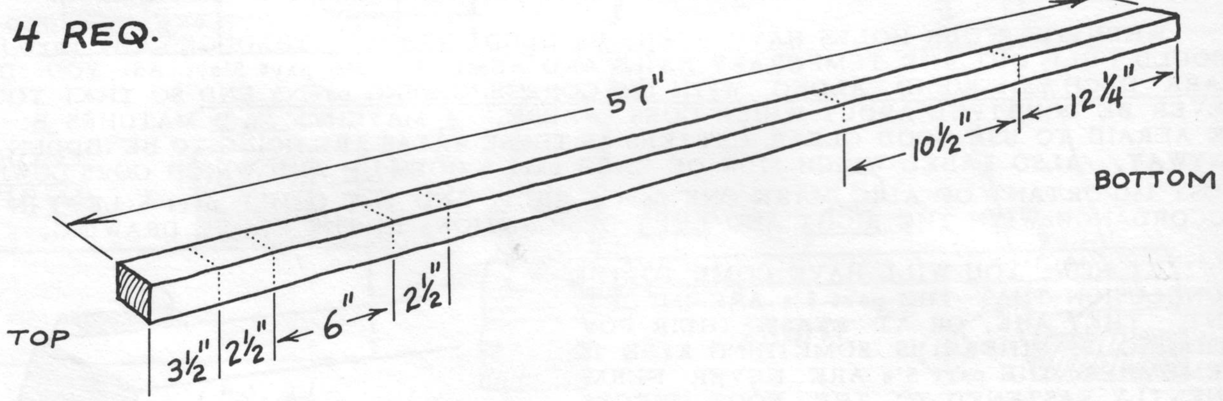
2 REQ. 28¾" LONG

⑨ **1"x2"**

2 REQ. 13" LONG

⑧ **2"x2"**

4 REQ.



⑩ **1"x 2"**

2 REQ. 10½" LONG

⑪ **1"x 2"**

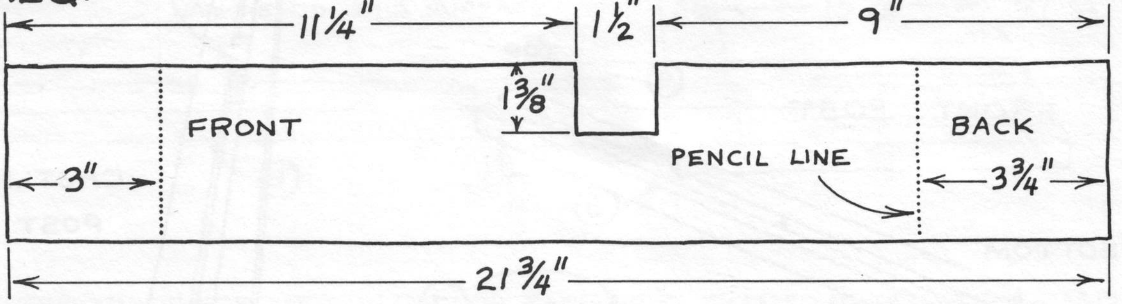
4 REQ. 2½" LONG

⑬ **1"x4"**

2 REQ. 15" LONG

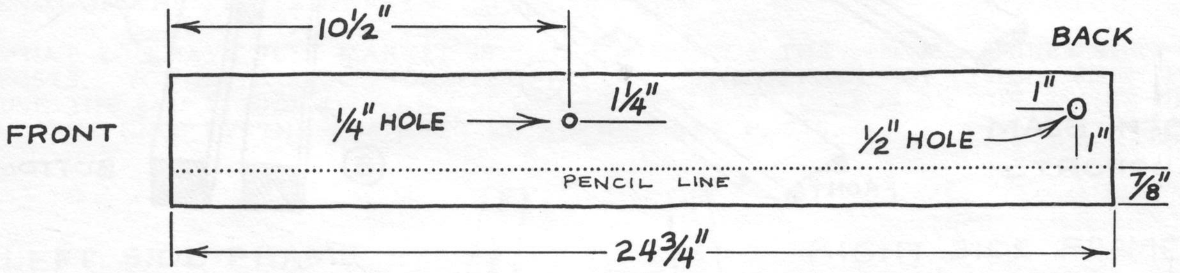
⑫ 1" x 4"

2 REQ.



⑭ 1" x 4"

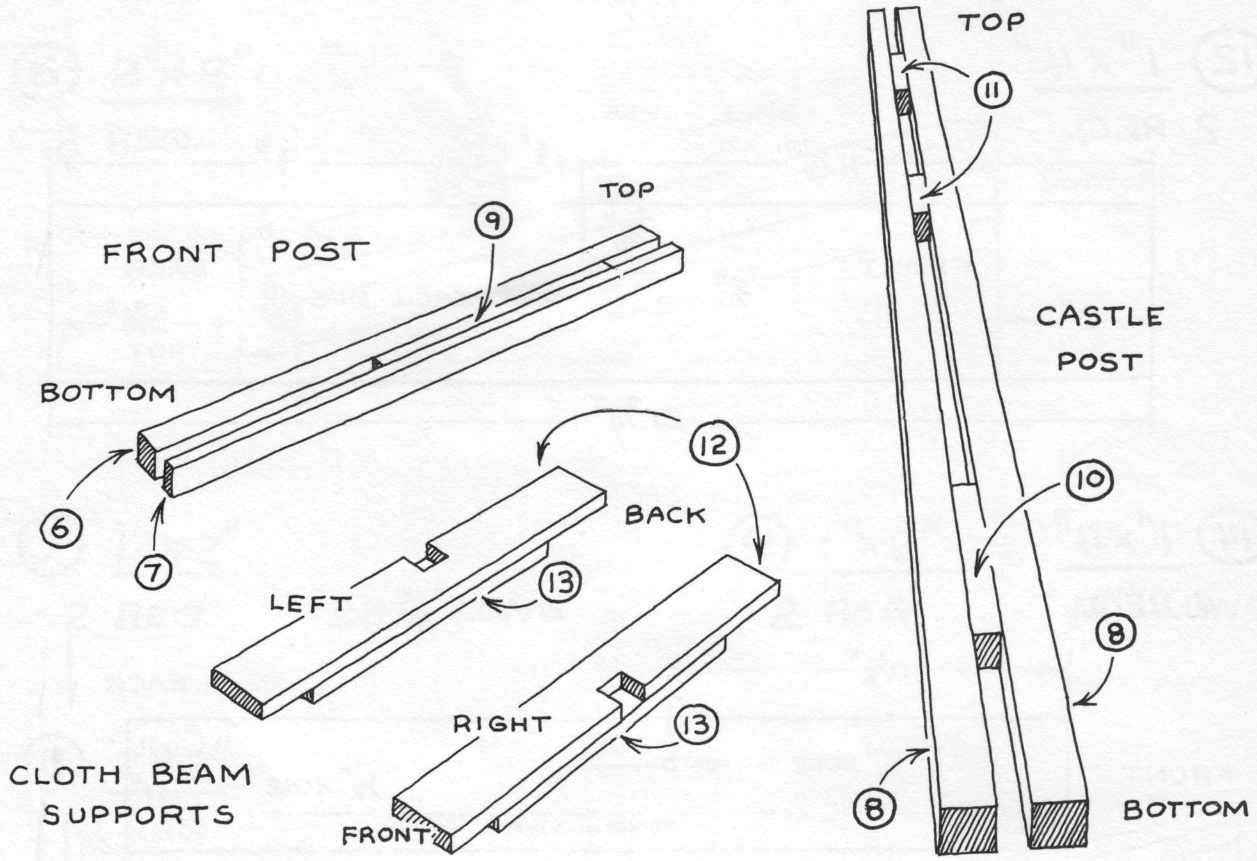
4 REQ.



IN MAKING THE PARTS DESCRIBED ABOVE, DO A GOOD JOB OF SMOOTHING THE END GRAIN OF EACH WITH RASP AND SANDPAPER. WHERE PENCIL LINES ARE SHOWN, MAKE ONLY LIGHT MARKS BUT CARRY THEM AROUND ALL FOUR SIDES OF THE PIECE USING THE SQUARE. LABEL TOP AND BOTTOM, FRONT AND BACK CLEARLY, TO PREVENT MISTAKES WHEN THE TIME COMES TO ASSEMBLE.

THE part 12's HAVE A NOTCH CUT IN THE UPPER SIDE. THESE MUST BE MADE VERY ACCURATELY, ESPECIALLY THE BOTTOM OF EACH NOTCH. TO MAKE THEM, MEASURE AND MARK CAREFULLY THE COMPLETE OUTLINE ON BOTH SIDES OF THE part 12 USING THE SQUARE. IT IS A SIMPLE MATTER TO CUT THE SIDES OF THE NOTCH WITH THE SAW BUT FORMING THE BOTTOM WILL REQUIRE THE CHISEL. MAKE TWO OR THREE EXTRA SIDE BY SIDE CUTS ALMOST DOWN TO THE BOTTOM LINES AND THE CHISELING OUT OF THE NARROW SEGMENTS WILL BE EASY.

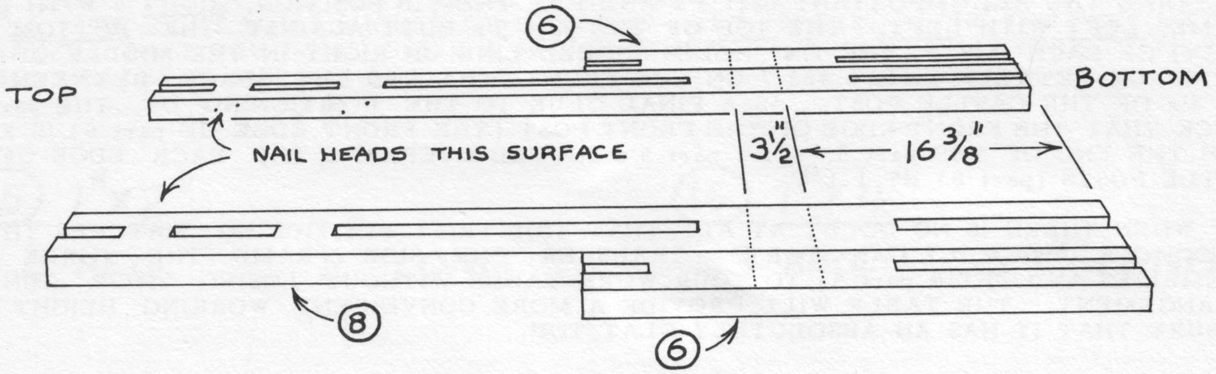
WHEN DRILLING THE 1/4" AND 1/2" HOLES INTO THE part 14's YOU SHOULD HOLD THEM TOGETHER IN PAIRS, ONE ON TOP OF THE OTHER. TWO OF THE 14's WILL GO ON THE RIGHT SIDE OF THE LOOM AND TWO ON THE LEFT, THE TWO MEMBERS OF EACH PAIR BEING SEPARATED BY AN INCH AND A HALF IN THE FINAL ASSEMBLY. WHEN BOLTS AND PEGS ARE INSERTED IN THE HOLES, THE part 14's MUST BE IN MATCHED PAIRS OR THE BOLTS AND PEGS MIGHT BE A LITTLE ASKEW. YOU WILL NEED TO LABEL AGAIN; ONE PAIR MARKED LEFT, THE OTHER RIGHT. ALSO, WHEN YOU USE THE BRACE AND 1/2" BIT, REMEMBER THAT YOU SHOULD NOT DRILL ALL THE WAY THROUGH. WHEN THE POINT OF THE BIT PEEKS THROUGH ON THE OPPOSITE SIDE, TAKE THE BIT OUT AND FINISH THE HOLE ON THAT OTHER SIDE, USING THE PIN HOLE FOR THE STARTING POINT. THIS WAY YOU WILL AVOID TAKING CHUNKS OUT OF THE FINISH. THIS ADVICE DOES NOT APPLY TO HIGH SPEED DRILLS, JUST TO WOOD BITS USED WITH THE CARPENTER'S BRACE.



THE ASSEMBLY OF THE SIDE FRAMES OF THE LOOM BEGINS WITH THE MAKING OF THREE SUB-ASSEMBLIES FOR EACH OF THE TWO FRAMES. THE FIRST SUB-ASSEMBLY, THE FRONT POST, IS MADE FROM parts 6, 7, and 9. BEGIN BY NAILING AND GLUING part 9 TO part 6, USING FOUR OR FIVE STAGGERED 3^{d} NAILS. THE PENCIL LINES ON part 6 SHOW WHERE THE 9 GOES. IN THIS CASE, WHERE THERE ARE NO HOLES DRILLED FOR THE NAILS, DRIVE TWO NAILS CLOSE TO THE ENDS OF THE part 9 UNTIL THEY BEGIN TO COME OUT THE OTHER SIDE. POSITION IN THE USUAL WAY, AND DRIVE THE NAILS IN ANOTHER 1/16" TO FIX THE POSITION. THEN SPREAD GLUE AND RE-NAIL. OTHER NAILS ARE ADDED BETWEEN THE END ONES TO CLAMP THE PIECE WELL. USE THE ABOVE TECHNIQUE IN ADDING THE part 7 ON TOP OF THE part 9. THIS OPERATION SHOULD BE DONE CAREFULLY SO THAT THE BOTTOM OF part 7 IS SQUARE WITH THE BOTTOM OF part 6 AND THE WHOLE UNIT LIES ABSOLUTELY FLAT WHEN IT IS ON ITS SIDE AS IN THE DRAWING.

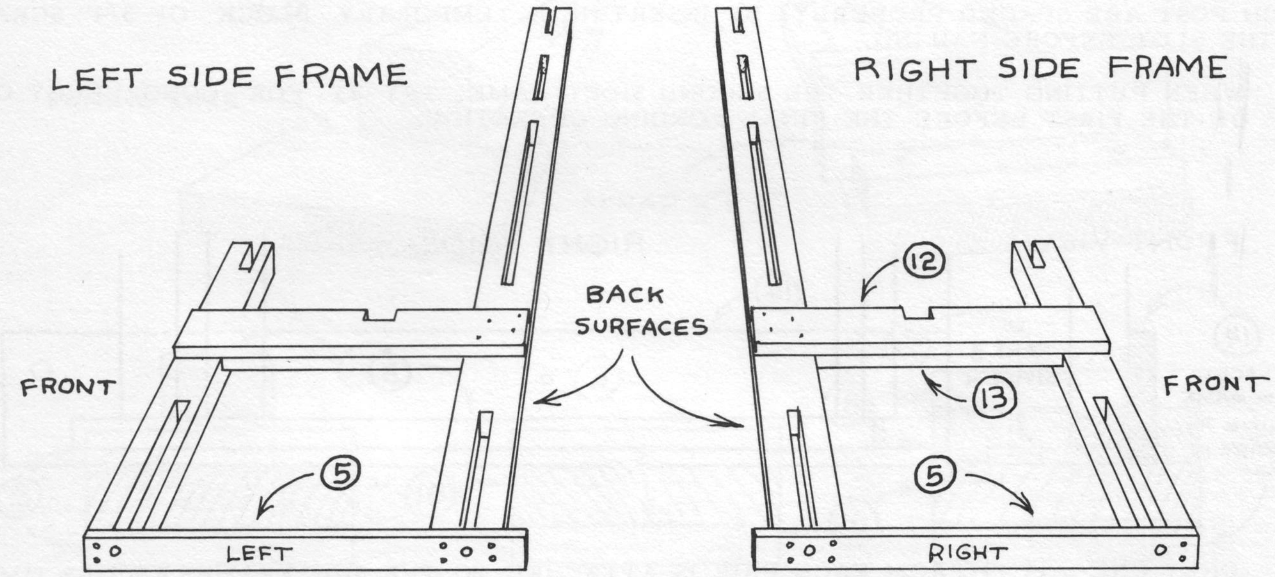
THE SECOND SUB-ASSEMBLY, THE CLOTH BEAM SUPPORT, USES TWO PARTS; part 12 AND part 13. YOU WILL NOTICE THAT BOTH UNITS ARE PICTURED IN THE DRAWING ABOVE. THIS IS BECAUSE THERE IS A RIGHT AND A LEFT ONE. STUDY THE DRAWING CAREFULLY AND MAKE YOUR UNITS JUST LIKE THEM, LABELING RIGHT AND LEFT. AS WITH THE FRONT POST UNITS, PENCIL LINES SHOW THE LOCATION OF THE part 13 ON THE part 12. USE EIGHT OR NINE RANDOMLY PLACED 3^{d} NAILS TO CLAMP EACH UNIT TOGETHER WHILE THE GLUE DRIES. NAIL FROM THE part 12 SIDE SINCE THIS IS THE INSIDE SURFACE WHEN THE LOOM IS ASSEMBLED.

THE CASTLE POST IS THE THIRD ASSEMBLY. IT IS MADE UP OF FIVE PIECES; TWO part 8's, A part 10 AND TWO part 11's. Parts 10 and 11 ARE FASTENED IN THE FAMILIAR WAY WITH 3^{d} NAILS AND GLUE TO THE FIRST part 8. PENCIL LINES ARE THE GUIDE HERE TOO, THE part 10's GOING NEAR THE BOTTOM AND THE part 11's NEAR THE TOP. WHEN THE 10's AND 11's ARE ON, THE SECOND 8's GO ON TOP, FORMING THE UNITS AS SEEN IN THE PICTURE. THE SECOND part 8's NEED TO BE HELD WITH 6^{d} NAILS AS WELL AS GLUE. FOR THESE LARGER NAILS YOU MAY NEED TO DRILL EIGHT 1/16" HOLES IN THE SECOND part 8's, TWO FOR EACH OF THE TOP (part 11) POSITIONS AND FOUR FOR THE BOTTOM (part 10) POSITION. AS WITH THE FRONT POSTS, THESE CASTLE POSTS SHOULD BE SQUARE AT THE BOTTOM.



WHEN THE THREE SUB-ASSEMBLIES FOR EACH SIDE FRAME HAVE BEEN FASTENED TOGETHER, PAIR UP EACH CASTLE POST WITH A FRONT POST. PLACE THEM WITH THEIR BOTTOM EDGES ALINED AS SHOWN IN THE DRAWING ABOVE. NOTICE THAT THE 1"x 2" (part 7) SIDE OF EACH FRONT POST IS FACING IN, TOUCHING THE COMPANION CASTLE POST. AFTER ASSURING YOURSELF THAT EACH PAIRED UNIT IS ABSOLUTELY SQUARED AWAY AT THE BOTTOM EDGE, DRAW A PENCIL LINE ACROSS THE WIDE SURFACE OF EACH PAIR USING THE SQUARE. MAKE THE LINE PRECISELY 16 3/8" FROM THE BOTTOM EDGE AND THEN MAKE ANOTHER PARALLEL LINE, 3 1/2" ABOVE IT. (HERE "ABOVE" MEANS TOWARD THE ENDS OF THE PIECES MARKED TOP).

WHAT YOU HAVE JUST MARKED IS THE POSITION OF THE part 12's WHERE THEY CROSS THE POSTS. YOU HAVE ALSO INDICATED THE INSIDE SURFACE OF EACH SIDE FRAME BECAUSE THE part 12 SIDE OF THE CLOTH BEAM SUPPORT UNIT IS ON THE INSIDE OF THE LOOM. THE ENDS OF THE 13's BUTT UP AGAINST THE POSTS.



NOW TAKE THE SIDE FRAME PAIRS AND SEPARATE THE POSTS OF EACH BY 15". THE CLOTH BEAM SUPPORT UNITS (parts 12 and 13) WILL NOW FIT NEATLY INTO PLACE BETWEEN THE PENCIL LINES. YOU WON'T BE ABLE TO EXCHANGE ENDS BECAUSE THE FIT OF THE 12's WOULD BE OBVIOUSLY WRONG BUT IT STILL IS POSSIBLE TO HAVE THE CLOTH BEAM SUPPORT UNITS ON THE WRONG SIDE FRAMES. REMEMBER THAT THERE IS A RIGHT AND A LEFT. AS A CHECK, TO BE CERTAIN THAT YOUR LABELING IS ACCURATE, SEE IF THE NOTCHES IN THE part 12's ARE FACING THE TOP END OF THE FRAMES AS THEY DO IN THE DRAWING. AS ANOTHER CHECK, THIS ONE TO BE SURE THAT THE NOTCHES HAVE BEEN MADE IN THE CORRECT PLACE, MEASURE FROM THE FRONT SIDE OF THE NOTCH TO THE FRONT EDGE OF THE part 12 (WHICH IS EVEN WITH THE FRONT EDGE OF part 6). THIS MEASUREMENT SHOULD BE 11 1/4".

TAKE THE ALL IMPORTANT part 5's AND PUT THEM IN POSITION, RIGHT 5 WITH RIGHT FRAME, LEFT WITH LEFT. THE TOP OF THE part 5's BUTT AGAINST THE BOTTOM (END GRAIN) OF EACH POST. THE 1/4" HOLES SHOULD LINE UP RIGHT IN THE MIDDLE OF THE 3/4" SPACE BETWEEN parts 6 and 7 ON THE FRONT POST AND THE SPACE BETWEEN THE part 8's OF THE CASTLE POST. AS A FINAL CLUE TO THE POSITIONING OF THE part 5's, CHECK THAT THE FRONT EDGE OF THE FRONT POST (THE FRONT EDGE OF part 6) IS FLUSH WITH THE END OF THE part 5. THE part 5's SHOULD OVERHANG THE BACK EDGE OF THE CASTLE POSTS (part 8) BY 1 1/4".

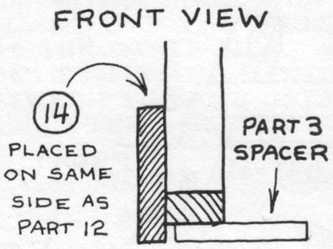
WHEN THERE IS NO DOUBT AT ALL THAT THIS TRIAL POSITIONING MATCHES THE INSTRUCTIONS, ASSEMBLY CAN START. TRANSFER ONE SIDE FRAME (THE THREE SUBASSEMBLIES AND THEIR part 5) TO YOUR WORK TABLE WITHOUT LOSING THEIR GENERAL ARRANGEMENT. THE TABLE WILL PROVIDE A MORE CONVENIENT WORKING HEIGHT BUT BE SURE THAT IT HAS AN ABSOLUTELY FLAT TOP.

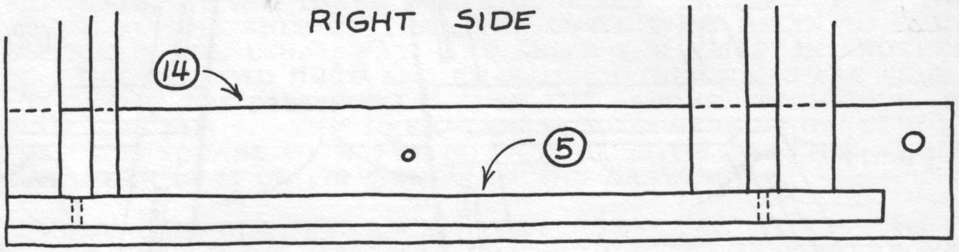
ATTACH THE part 12 PERMANENTLY TO THE part 8's OF THE CASTLE POST, USING FOUR STAGGERED 6^d NAILS AND GLUE. DRILL 1/16" HOLES FOR THE NAILS AND WHEN YOU ALINE, BE CERTAIN THAT THE 12 MAKES A RIGHT ANGLE WITH THE POST BY USING THE FRAMING SQUARE. BUTT THE END OF part 13 UP HARD AGAINST part 8.

USE A TEMPORARY POSITIONING 6^d NAIL IN THE END GRAIN OF EACH POST TO POSITION THE part 5. THEN ADJUST THE JOIN BETWEEN THE 12 AND THE FRONT POST. THERE ARE FOUR IMPORTANT THINGS TO WATCH: FIRST — THE ANGLE THAT THE part 5 MAKES WITH THE part 8's MUST BE A PERFECT RIGHT ANGLE. SECOND — THE DISTANCE BETWEEN part 7 AND part 8 (AT THEIR BOTTOMS) SHOULD BE 15", THE SAME AS THE LENGTH OF part 13. THIRD — THE 1/4" HOLES SHOULD BE CENTERED IN THE POST SPACES, AND FINALLY, part 7 SHOULD BE BUTTED UP TIGHTLY AGAINST part 13. A DISCREPANCY OF 1/16" IS ALLOWABLE BETWEEN part 12 AND THE PENCIL LINES ACROSS THE FRONT POST.

DRIVE A POSITIONING NAIL IN THE 12, RECHECK ALL ANGLES AND MEASUREMENTS AND PUT THE FRAME TOGETHER PERMANENTLY, USING PLENTY OF GLUE FOR THE part 5 JOINS. IN NAILING THE part 5's, DON'T PUT IN MORE THAN TWO OR THREE NAILS FOR EACH POST MEMBER AND DRILL THE 5 FOR EACH NAIL. MAKE SURE THE TWO ENDS OF EACH POST ARE SPACED PROPERLY, BY INSERTING A TEMPORARY BLOCK OF 3/4" SCRAP IN THE SLOT BEFORE NAILING.

WHEN PUTTING TOGETHER THE SECOND SIDE FRAME, TRY IT FOR CONGRUENCY ON TOP OF THE FIRST BEFORE THE FINAL BONDING OPERATION.





ONLY ONE part 14 FROM EACH PAIR IS ATTACHED TO THE SIDE FRAMES AT THIS TIME. BE CERTAIN TO MAKE USE OF YOUR MARKING SYSTEM — ONE RIGHT 14 GOES TO THE RIGHT FRAME AND ONE OF THE LEFT 14's GOES TO THE LEFT FRAME.

EACH OF THE TWO part 14's THAT ARE BEING USED IS FASTENED TO THE INSIDE SURFACE OF ITS FRAME. THIS IS THE SAME SIDE ON WHICH IS MOUNTED THE part 12. NOTICE THAT THE EDGE THAT IS CLOSEST TO THE 1/2" HOLE GOES UP AND THAT THE FRONT END IS FLUSH WITH THE FRONT OF parts 5 and 6. THE BACK END OF part 14 (THE END WITH THE 1/2" HOLE) PROJECTS 3" BEYOND THE BACK OF THE CASTLE POST.

Part 14 PROJECTS EXACTLY 1/2" BELOW THE BOTTOM OF part 5. THIS IS THE CRITICAL DIMENSION. TO INSURE IT, USE A COUPLE OF YOUR 1/2" THICK part 3's AS TEMPORARY SPACER BLOCKS. (THERE SHOULD BE TWENTY OF THEM LYING AROUND.) USE PLENTY OF GLUE, ESPECIALLY ALONG THE SURFACE OF THE part 5, AND USE ONLY 3^d

NAILS. DON'T PUT IN TOO MANY NAILS. FOUR OR FIVE DRIVEN INTO EACH POST UNIT WILL DO, AND EIGHT NAILS SHOULD GO INTO THE part 5, SPACED ALONG THE PENCIL LINE. BE CAREFUL THAT YOU DON'T DRIVE A 3d NAIL WHERE IT WOULD INTERFERE WITH THE 1/4" BOLT HOLES IN THE part 5.

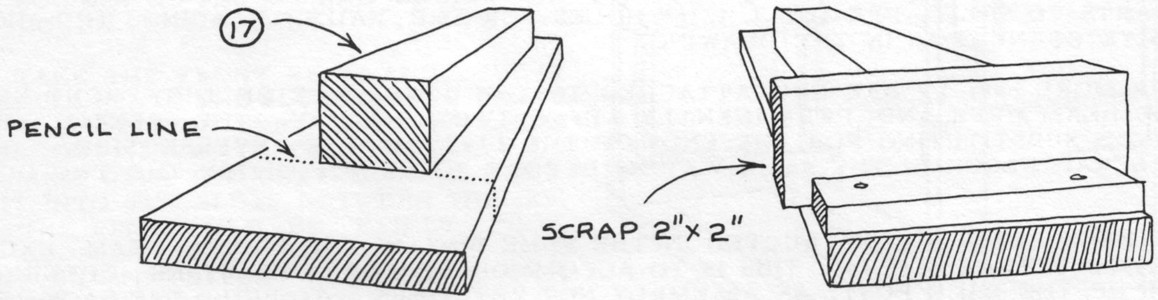
⑮ 1"x2"
4 REQ. 2" LONG

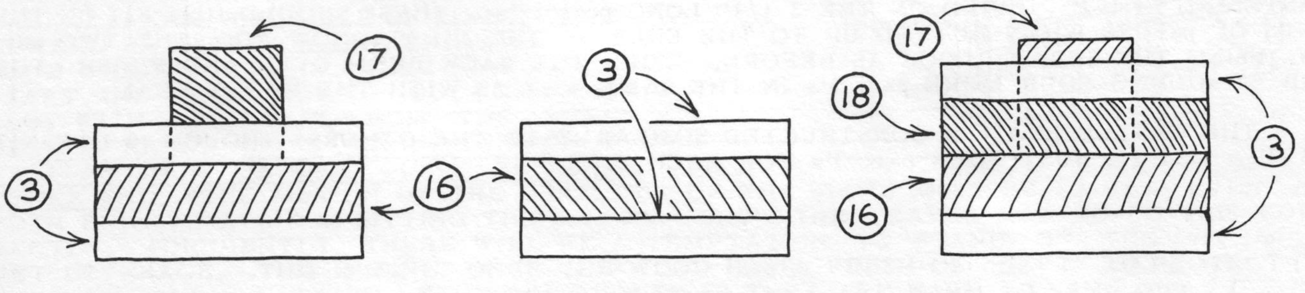
⑯ 1"x4"
3 REQ. 59" LONG

⑰ 2"x2"
2 REQ. 52½" LONG

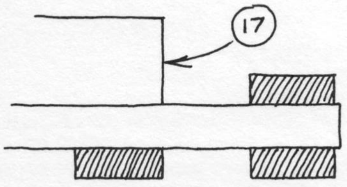
⑱ 1"x4"
2 REQ. 3¼" LONG

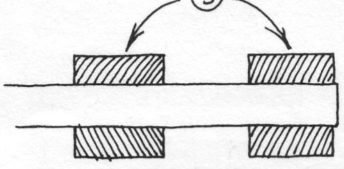
THE MAKING OF THE ABOVE PARTS WILL PRESENT NO PROBLEMS. SAND EACH END WELL. THE FINISH OF THE LONG PIECES IS IMPORTANT, SO SAND THEM FOR THEIR ENTIRE LENGTH WITH FINE SANDPAPER, PAYING SPECIAL ATTENTION TO ANY SMALL FLAWS AND SLIVERS WHICH WOULD INJURE A WARP. NOW IS THE TIME TO SAND DOWN THE ENDS OF THE TWENTY REMAINING part 3's. DO A THOROUGH JOB. THE FINISHED APPEARANCE OF THE LOOM DEPENDS ON IT.

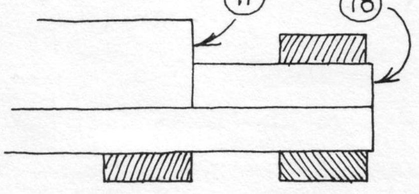




FRONT BEAM CASTLE BEAM BACK BEAM







THE PIECES YOU HAVE JUST MADE WILL NOW BE COMBINED WITH THE part 3's TO CONSTRUCT THE THREE REMOVABLE BEAMS OF THE LOOM FRAME THAT HOLD THE SIDES TOGETHER. THESE ALSO GIVE THE FRAME RIGIDITY AND TWO OF THEM PROVIDE A FIRM STRETCHER FOR THE WARP.

THE NAMES OF THE THREE BEAMS ARE: THE FRONT BEAM, WHICH FITS INTO THE UPPER SLOT OF THE FRONT POSTS; THE CASTLE BEAM, WHICH IS THE HIGHEST MEMBER OF THE LOOM, FITTING INTO THE TOP OF THE CASTLE POSTS; AND THE BACK BEAM, WHICH WILL BE CLAMPED INTO THE TOPS OF THE EXTENDING BACK POSTS WHEN THESE ARE BUILT.

BEFORE ASSEMBLY, TAKE ONE OF THE part 17's AND CENTER IT OVER EACH ONE OF THE part 16's IN TURN, USING THE ENDS OF THE 2"x2" AS THE GUIDE FOR PLACING TWO PENCIL MARKS ON EACH 16. THIS DETERMINES THE WIDTH OF THE LOOM BETWEEN THE SIDE FRAMES. IF YOUR CUTTING OF THE 16's AND 17's HAS BEEN ACCURATE THESE MARKS SHOULD BE 3 1/4" IN FROM EACH END. ONCE THIS IS DONE, EXTEND THE PENCIL LINES ALL OF THE WAY AROUND EACH END OF THE part 16's, USING THE SQUARE AND A SHARP PENCIL.

TO MAKE THE FRONT BEAM, TAKE ONE OF THE 16's AND FASTEN A part 17 TO IT WITH GLUE AND A HALF DOZEN 6^{d} NAILS. NAIL FROM THE part 16 SIDE OF COURSE. THE 2"x2" 17 SHOULD BE CENTERED SO THAT IT IS 1" FROM EACH EDGE OF THE WIDER PIECE. ALSO, THE ENDS OF THE part 17 SHOULD BE RIGHT ON THE LINES PREVIOUSLY DRAWN. WHEN THE 17 IS IN PLACE, TAKE TWO part 3's AND GLUE AND NAIL THEM EXACTLY 1 1/2" OUT FROM THE ENDS OF THE part 17. THERE IS NO NEED TO DRAW ANOTHER PENCIL LINE TO DO THIS. THE MOST ACCURATE WAY IS TO TAKE A SCRAP PIECE OF 2"x2", BUTT IT UP AGAINST THE END OF THE 17 AND THEN PUSH THE EDGE OF THE part 3 UP HARD AGAINST THE SCRAP BLOCK WHILE DOING YOUR POSITION NAILING. AFTER THE 3 IS FASTENED WITH GLUE AND TWO 3^{d} NAILS, THE SCRAP 2"x2" IS REMOVED. IF THE WOOD STARTS TO SPLIT, PRE-DRILL 1/16" HOLES FOR THE NAILS, PLACING THE HOLES IN OPPOSITE CORNERS AS IN THE DRAWING.

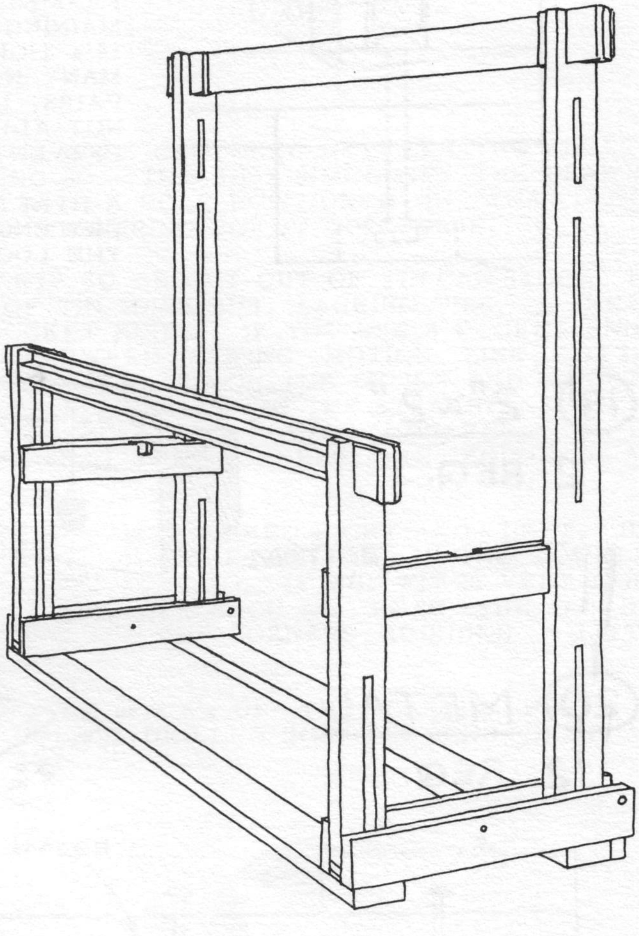
FOUR MORE part 3's ARE NOW ATTACHED TO THE OTHER SIDE OF THE FRONT BEAM. TURN THE BEAM OVER AND PERMANENTLY AFFIX TWO part 3's ON THE PENCIL LINES, THEIR EDGES SUBSTITUTING FOR THE ENDS OF THE 2"x2" ON THE REVERSE SIDE. THEN USE THE SCRAP BLOCK IN THE SAME WAY AS BEFORE TO HELP POSITION THE TWO OUTER part 3's.

THE BACK BEAM IS CONSTRUCTED IN THE SAME WAY AS THE FRONT BEAM EXCEPT FOR THE ADDITION OF part 18. THIS IS TO ACCOMMODATE FOR THE WIDER OPENING OF THE JAWS OF THE BACK POST, AN ASSEMBLY NOT YET BUILT. TO BUILD THE BACK BEAM, BEGIN AS YOU DID FOR THE FRONT BEAM. ATTACH THE REMAINING part 17, BUT BEFORE FASTENING part 3's, BUILD ON THE 3 1/4" LONG part 18's. THESE SHOULD JUST FIT ON THE ENDS OF part 16 WHEN BUTTED UP TO THE ENDS OF THE 2"x2". NOW ADD THE TWO part 3's, USING THE SCRAP BLOCK AS BEFORE. TURN THE BACK BEAM OVER AND FINISH THE JOB BY ADDING FOUR MORE part 3's IN THE SAME WAY AS WITH THE FRONT BEAM.

THE CASTLE BEAM IS CONSTRUCTED SIMILARLY TO THE OTHERS, THOUGH IT DOESN'T HAVE A part 17, JUST FOUR part 3's FOR EACH END.

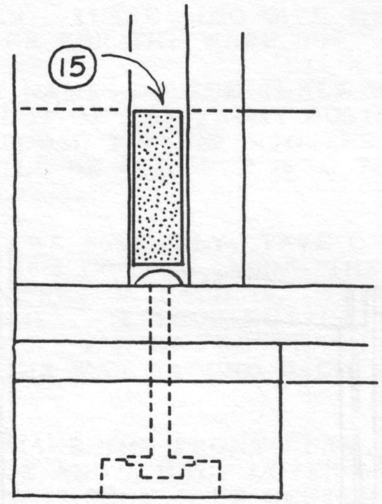
ONE OF THE MOST ENJOYABLE STEPS IN THE BUILDING OF ANY LOOM IS THE ONE THAT FOLLOWS; THE ERECTING OF THE FRAME.

TAKE FOUR 2 1/2" CARRIAGE BOLTS AND PLACE THEM, THREADED END DOWN, IN THE FOUR 1/4" HOLES OF THE part 5's. EACH SIDE FRAME CAN THEN BE LIFTED ON TO THE RESPECTIVE ENDS OF THE FOOT PIECES WITH THE BOLT ENDS DROPPING INTO THE HOLES IN THE 3's AND 4's. PUSH THEM IN ALL THE WAY AND THEN TIP THE WHOLE ASSEMBLY ON ITS BACK SO THAT THE POCKETS ARE ACCESSIBLE. WASHERS FOLLOWED BY COMMON NUTS (NOT WING NUTS) CAN BE PLACED AND TIGHTENED ON THE BOLT ENDS. WHEN THE LOOM IS LIFTED UPRIGHT AGAIN THE 5's SHOULD SEAT SOLIDLY ON THE 3's AND 4's AND THE 14's SHOULD REST FIRMLY ON THE 1's.



TAKE THE FRONT BEAM AND SLIDE IT CAREFULLY INTO THE SLOTS OF THE FRONT POST. MAKE SURE THAT THE part 17 SIDE FACES OUT, 2"x2" TOUCHING 2"x2". DO THE SAME WITH THE CASTLE BEAM, PUSHING IT INTO THE SLOTS BETWEEN THE part 8's. THE FIT SHOULD BE FAIRLY FIRM, AS A LOOM NEEDS A RIGID FRAME. THE FRONT BEAM MUST BE REMOVABLE FOR SOME OF THE PROCESSES OF WEAVING SO YOU SHOULD PRACTICE THE TECHNIQUE OF TAKING IT OUT A NUMBER OF TIMES. PUT UPWARD PRESSURE ON ONE END WITH ONE HAND WHILE WITH THE OTHER HAND YOU START THE BEAM MOVING OUT OF THE SLOT WITH QUICK TAPS FROM THE HEEL OF THE HAND. MOVE EACH END ONLY HALF AN INCH BEFORE GOING TO THE OTHER END. THE MOTION OF THE BEAM OUT OF THE SLOTS MUST BE FAIRLY EVEN AT BOTH ENDS TO AVOID SPLITTING THE part 3's. SHOW THE WEAVER HOW TO DO THIS CORRECTLY. (INCIDENTLY, THERE WILL BE A TEMPTATION TO STAND ON THE part 1's TO GET LEVERAGE. THIS IS FINE, ONCE THE WOOD HAS A FINISH OF "DEFT" TO PROTECT IT. FOR NOW, THOUGH, DON'T LEAVE FOOTPRINTS AS THEY ARE HARD TO SAND OUT.)

IN THE EVENT THAT THE FIT OF A BEAM IS TOO CLOSE TO ENABLE YOU TO REMOVE IT BY HAND — GO EASY WITH THE WOOD RASP. BETTER TOO TIGHT THAN TOO LOOSE, AS THE LUMBER MAY HAVE ABSORBED A LITTLE MOISTURE SINCE BEING KILN-DRIED.

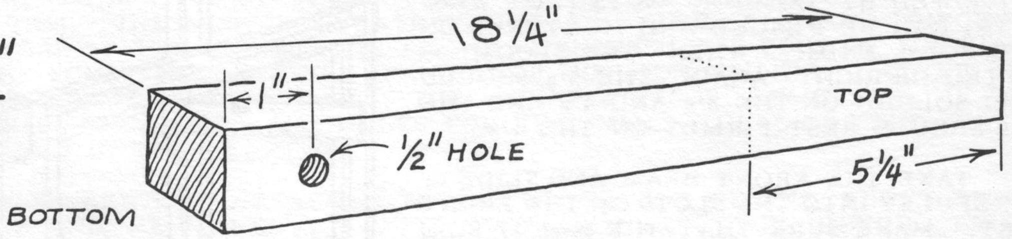


NOW THAT THE LOOM IS HELD STEADY, THE REMAINING part 14's CAN BE INSTALLED. TILT THE LOOM BACK AND LOOSEN EACH NUT BY ONE QUARTER TURN. NOW RIGHT THE LOOM AND COAT THE TOP OF EACH CARRIAGE BOLT WITH PLENTY OF GLUE AND SPREAD GLUE ON THE INSIDES OF THE SLOT UP TO THE LEVEL OF THE part 14, BEFORE SLIDING IN THE part 15 ON TOP OF THE BOLT HEAD. ALL FOUR BOLTS ARE BUILT PERMANENTLY INTO THE SIDE FRAMES IN THIS WAY. SPREAD GLUE FOR EACH REMAINING 14 BEFORE NAILING IT IN PLACE. BUTT THE 14's TIGHTLY AGAINST THE 1's, BUT DON'T USE TOO MANY NAILS. REMEMBER TO MATCH UP THE part 14 PAIRS, LEFT WITH LEFT, RIGHT WITH RIGHT. DO NOT ALLOW ANY GLUE TO RUN WHERE IT COULD PREVENT THE 1's FROM BEING REMOVED.

AFTER SEVERAL HOURS THE GLUE SHOULD BE DRY ENOUGH FOR YOU TO TIGHTEN THE NUTS AGAIN. THE LOOM FRAME HAS NOW BEEN BUILT.

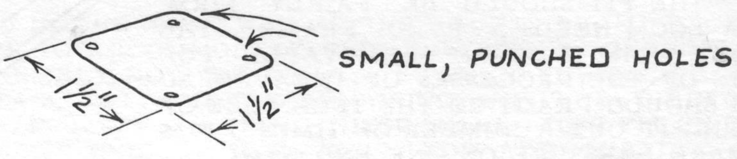
⑲ 2"×2"

2 REQ.



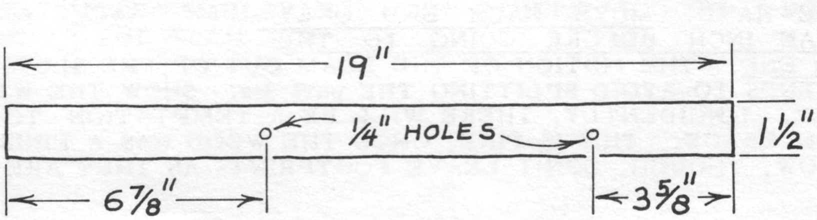
⑳ METAL

2 REQ.



㉑ 1"×2"

4 REQ.

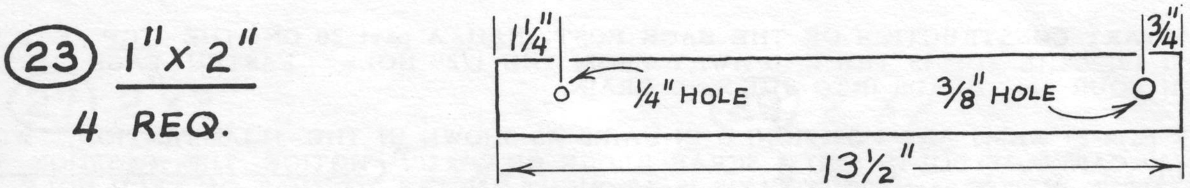


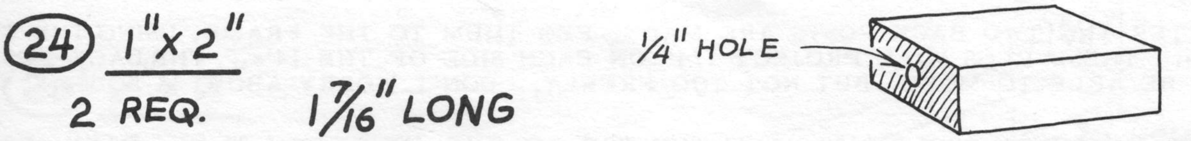
㉒ ½" DOWEL

2 REQ. 3½" LONG

㉕ ⅜" DOWEL

2 REQ. 3½" LONG



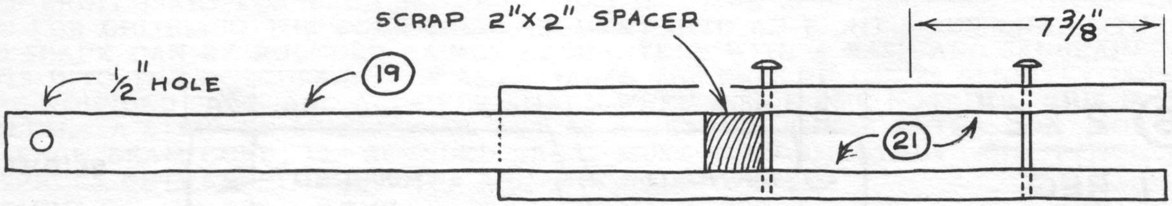


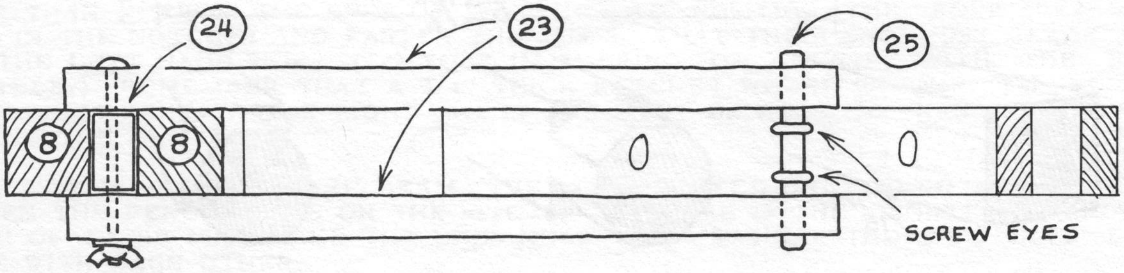
THE DRAWING FOR part 19 SHOWS THE 1/2" HOLE CENTERED BETWEEN THE EDGES OF THE 2"x2" THOUGH THERE IS NO LABEL SAYING SO. THIS JUST SIMPLIFIES THE DRAWING. WHENEVER YOU ENCOUNTER A PART SKETCH WITH A HOLE POSITIONED IN WHAT LOOKS LIKE THE CENTER, DRILL IT IN THE CENTER; MEASURING FOR IT OF COURSE.

Part 20 IS THE FIRST OF THE METAL PARTS TO BE CUT OUT OF TIN CAN STOCK. THE RECOMMENDED TOOL IS NATURALLY A PAIR OF TIN SNIPS BUT, LACKING THIS, A HEAVY PAIR OF SCISSORS WILL WORK, OR EVEN A POCKET KNIFE. IF YOU USE A POCKET KNIFE, WEAR GLOVES AND CUT THE METAL WITH A FORWARD SAWING MOTION LIKE CUTTING BREAD. AFTER YOU HAVE A FLATTENED PIECE, SCRATCH ON THE DESIGN AND HOLD THE PIECE BETWEEN TWO SMALL SCRAP BLOCKS OF LUMBER, USING THE STRAIGHT EDGE OF THE WOOD AS A GUIDE FOR THE KNIFE BLADE. ALWAYS FILE AND SANDPAPER A METAL PART WELL AFTER IT HAS BEEN CUT OUT, SO THAT THE CORNERS ARE ROUNDED AND THERE IS NO EDGE THAT CAN SLICE.

THE part 21's AND 23's ARE DRILLED OUT IN PAIRS MARKED RIGHT AND LEFT, JUST AS THE 14's WERE. AS FOR THE part 22's, YOU SHOULD CHECK TO SEE IF THE DOWELING WILL GO INTO THE 1/2" HOLES IN parts 19 WITHOUT FORCING. IF THE FIT IS VERY TIGHT, SAND DOWN THE DOWELING TO FIT BEFORE CUTTING OFF EACH 22. BOTH THE 1/2" DIAMETER part 22's AND THE 3/8" 25's SHOULD HAVE THE END CORNERS ROUNDED A LITTLE WITH SANDPAPER AFTER THEY ARE CUT OUT.

Part 24's MUST SLIDE FREELY BETWEEN THE part 8's OF THE CASTLE POSTS. IF THEY DON'T, SHAVE THEM DOWN. THE 1/4" HOLE IS DRILLED INTO THE END GRAIN AND OUT THE OTHER SIDE.





TO START CONSTRUCTION OF THE BACK POST, NAIL A part 20 ON THE TOP END OF EACH part 19. THE TOP IS THE END AWAY FROM THE 1/2" HOLE. FASTEN EACH METAL CAP WITH FOUR 3/4" BRADS INTO THE END GRAIN.

THE part 21 ARMS ARE POSITIONED IN PAIRS AS SHOWN IN THE ILLUSTRATION, WITH TWO 3 1/2" CARRIAGE BOLTS AND A SCRAP BLOCK OF 2"x2". NOTICE THE POSITION OF THE 1/2" HOLE IN THE part 19, ITS AXIS IS AT RIGHT ANGLES TO THAT OF EACH HOLE IN THE part 21's. ONCE THE UPPER part 21 IS ALINED, GLUED AND NAILED WITH THREE 3d NAILS, TAKE OUT THE BOLTS BUT LEAVE THE SCRAP 2"x2". NOW TURN THE ASSEMBLY OVER, RE-INSERT THE BOLTS AND ALINE THE REMAINING part 21 BEFORE FASTENING IT ALSO.

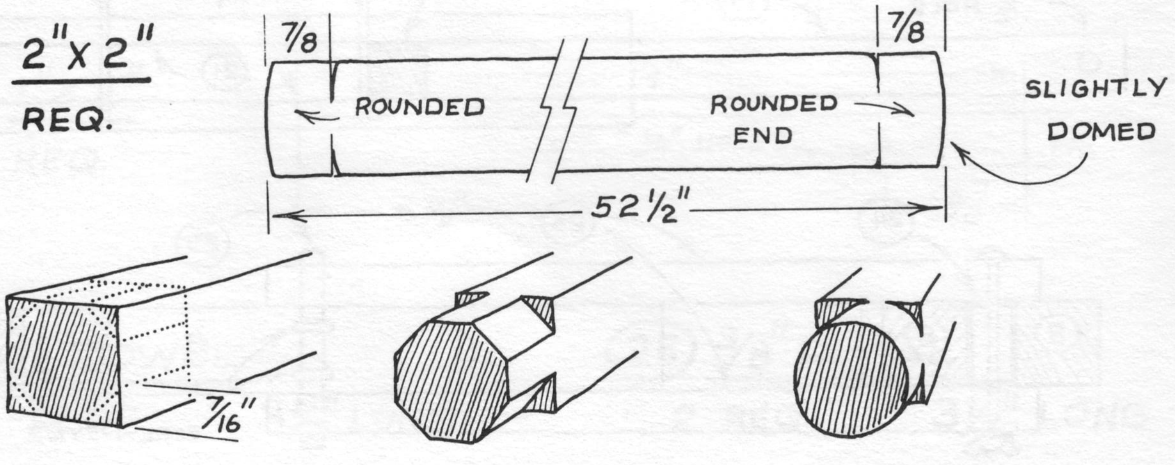
AFTER THE TWO BACK POSTS ARE MADE, PEG THEM TO THE FRAME, USING THE TWO part 22's. THESE PEGS WILL PROJECT 1/4" ON EACH SIDE OF THE 14's. THE BACK POSTS SHOULD BE ABLE TO MOVE, BUT NOT TOO FREELY. DON'T WORRY ABOUT A SQUEAK.

NOW MEASURE DOWN 7 3/8" FROM THE TOP OF THE INSIDE part 21 ON EACH BACK POST; THAT IS TO SAY, THE SURFACE FACING part 8. PUSH THE TWO POSTS ALL THE WAY DOWN UNTIL THEY TOUCH THE FLOOR, AND USE THE SQUARE TO DRAW A LINE ACROSS EACH 21 ON THE 7 3/8" MARK. NOW DRILL TWO 1/16" HOLES ON EACH LINE, 3/8" IN FROM EACH EDGE, AND PUT A SCREW EYE INTO EACH HOLE, TWO TO EACH POST. THE EYES SHOULD BE SCREWED ALL THE WAY IN AND EACH PAIR SHOULD BE EVENED UP SO THAT A 3/8" DOWEL FITTED THROUGH THEM WILL BE PARALLEL TO THE SURFACE OF THE part 21.

THE ADJUSTING ARMS FOR THE BACK POSTS ARE ASSEMBLED NOW. THE POSTS ARE SWUNG NEARLY UPRIGHT AGAIN. A part 25 3/8" DOWEL HAS ITS END INSERTED IN THE 3/8" HOLE OF A part 23 AND THE DOWEL IS PUSHED THROUGH THE SCREW EYES ON ONE OF THE POSTS FROM THE INSIDE. THE FREE END OF THE part 23 IS POSITIONED AGAINST THE INSIDE OF THE CASTLE POST, A 3 1/2" LONG CARRIAGE BOLT IS RUN THROUGH THE 1/4" HOLE AND BETWEEN THE part 8's AND A part 24 IS FITTED ON THE BOLT. TAKE THE OTHER ONE OF THE PAIR OF 23's AND WORK IT ON TO THE OUTER END OF THE 3/8" DOWEL AND ON THE BOLT. AFTER CENTERING THE DOWEL, WHICH WILL PROJECT 1/4" ON EACH SIDE OF THE 23's, PUT A WASHER AND WING NUT ON THE BOLT. THE WING NUT GOES ON THE OUTSIDE OF THE LOOM. THE BACK POST CAN NOW BE ADJUSTED BY SLIDING THE ARM UP AND DOWN THE SLOT OF THE CASTLE. TIGHTENING THE WING NUT WILL FIX THE POSITION.

WHEN BOTH ADJUSTING ARMS HAVE BEEN FITTED, LOCK THEM IN THE FULL OUT POSITION. THIS IS THE NORMAL PLACEMENT FOR WEAVING. THE BACK BEAM IS FOLDED WHEN MOVING THE LOOM THROUGH A DOORWAY OR FOR SOME TECHNIQUES OF THREADING. NOW PUT A 3 1/2" LONG CARRIAGE BOLT INTO EACH ONE OF THE FOUR SETS OF HOLES IN THE BACK POST. THE HEADS SHOULD BE UP AND ON THE CASTLE BEAM SIDE — THREADED ENDS SHOULD BE DOWN AND BACK. NOW THAT THERE ARE BOLTS TO SUPPORT IT THE BACK BEAM CAN BE FITTED INTO PLACE. THE 2"x2" (part 17) FACES BACK. WASHERS AND WING NUTS ARE PUT ON THE BOLTS AND CINCHED UP. NEVER TIGHTEN THESE NUTS UNLESS THE BACK BEAM IS IN PLACE. REMEMBER TO CAUTION THE WEAVER ABOUT THIS!

㉖ 2"x2"
1 REQ.



㉗ 2"x2"

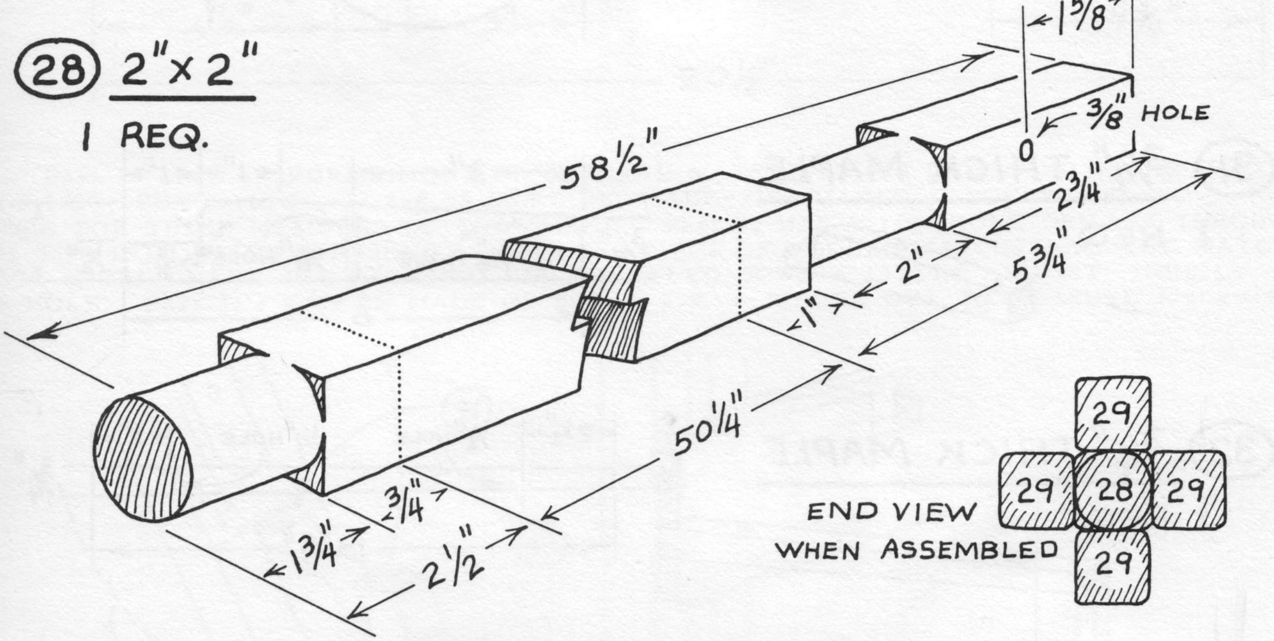
4 REQ. 50" LONG

㉙ 2" x 2"

4 REQ. 50¼" LONG

㉘ 2" x 2"

1 REQ.



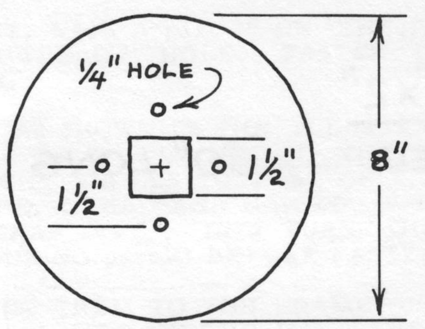
Parts 26 and 28 NEED TO HAVE THEIR ROUNDED PORTIONS CAREFULLY CHISELED, RASPED AND, FINALLY, SANDED. MARK WITH SHARP LINES EXACTLY WHERE THE ROUND AREAS TERMINATE USING THE SQUARE. PENCIL A LINE, PARALLEL TO THE SIDES, 7/16" IN FROM THE EDGE AND ON EACH SIDE OF EVERY EDGE, AS IN THE DRAWING. THAT MAKES EIGHT LINES FOR EACH SEGMENT THAT IS TO BE ROUNDED. USE THESE AS THE GUIDE FOR CHISELING THE FOUR SIDED SEGMENT INTO AN EIGHT SIDED ONE. THE EIGHT SIDED SHAPE CAN BE ROUNDED FAIRLY ACCURATELY WITH A RASP AND SANDPAPER. Part 26 FITS INTO THE NOTCHES IN THE 12's. DOME THE ENDS OF THE 26 SLIGHTLY, AS SHOWN. IF THE ROUNDED SIDES ARE A TRIFLE SMALL WHEN INSIDE THE NOTCHES, THIS IS NOT A PROBLEM. A STRIP OF METAL WILL ACT AS A BEARING THERE LATER. AS FOR part 28, (THE BACK BEAM CORE) ITS ROUNDED AREAS MUST TURN SMOOTHLY AND FIT SNUGLY IN THE SPACES BETWEEN THE part 20's AND THE BOLTS ABOVE.

IN BUILDING THE CLOTH BEAM, ATTACH ALL FOUR part 27's TO THE FOUR SIDES OF part 26 USING GLUE AND A HALF DOZEN 6^{d} NAILS FOR EACH. DON'T DRIVE THE NAILS ANY CLOSER THAN 2" FROM THE ENDS OF THE 27's. TO POSITION THE FOUR 2"x2"'s PLACE THE 26 IN THE NOTCHES AND FASTEN THE 27's SO THAT THEIR ENDS JUST CLEAR THE part 12 ON THE LEFT HAND SIDE. (DO YOUR HAMMERING, OF COURSE, WITH THE BEAM ON THE TABLE.) REMEMBER THAT A 3/4" THICK RATCHET WHEEL IS GOING TO BE FITTED ON THE BEAM NEXT TO THE RIGHT part 12 AND MUST BE ABLE TO TURN FREELY WITHOUT TOUCHING THE part 12.

IN ASSEMBLING THE WARP BEAM, THE part 29's NEED ONLY TO BE NAILED AND GLUED BETWEEN THE PENCIL LINES ON THE part 28. IF THERE IS THE SLIGHTEST VARIATION IN LENGTH OF THESE 29's, MAKE THE ENDS NEAR THE 3/8" HOLE THE ENDS THAT LINE UP SQUARE WITH EACH OTHER.

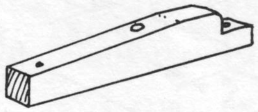
㉚ 1/4" THICK SHEET

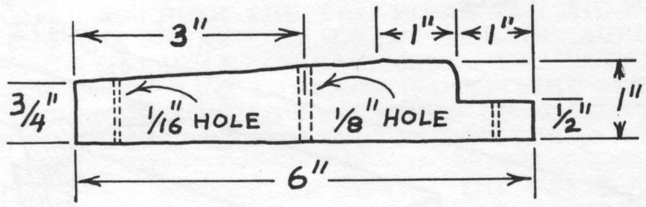
1 REQ.



㉛ 3/4" THICK MAPLE

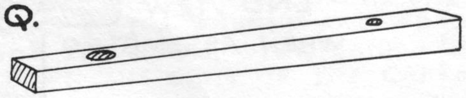
1 REQ.

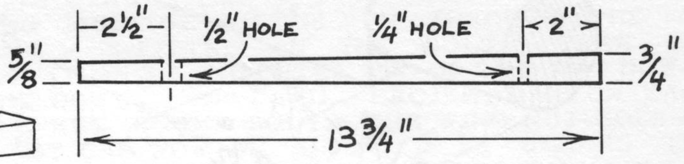




㉜ 3/4" THICK MAPLE

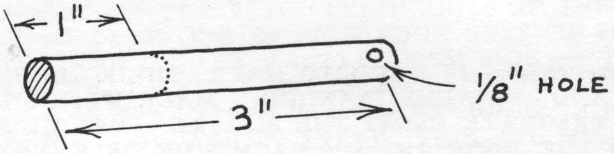
1 REQ.





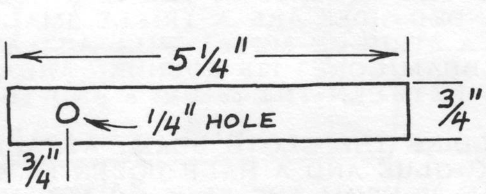
㉝ 3/8" DOWEL

1 REQ.



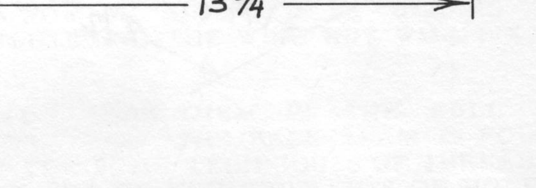
㉞ 1"X1"

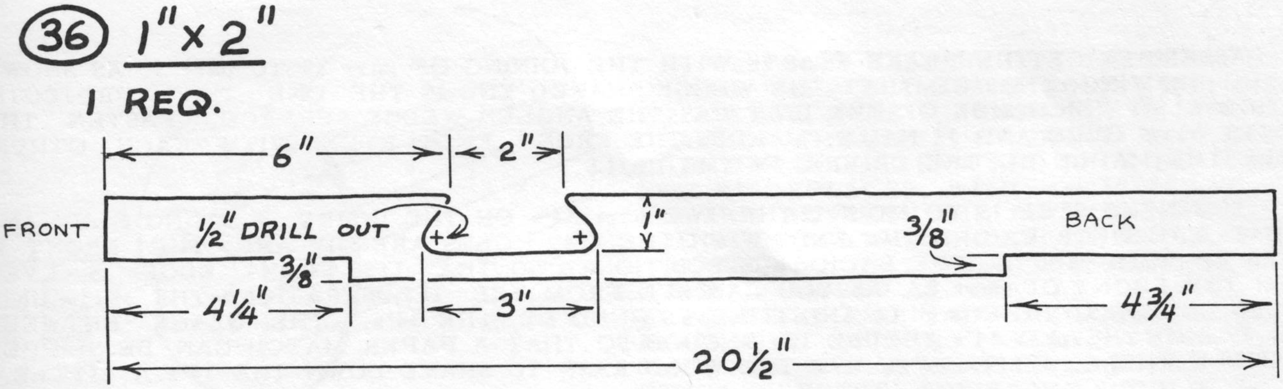
2 REQ.



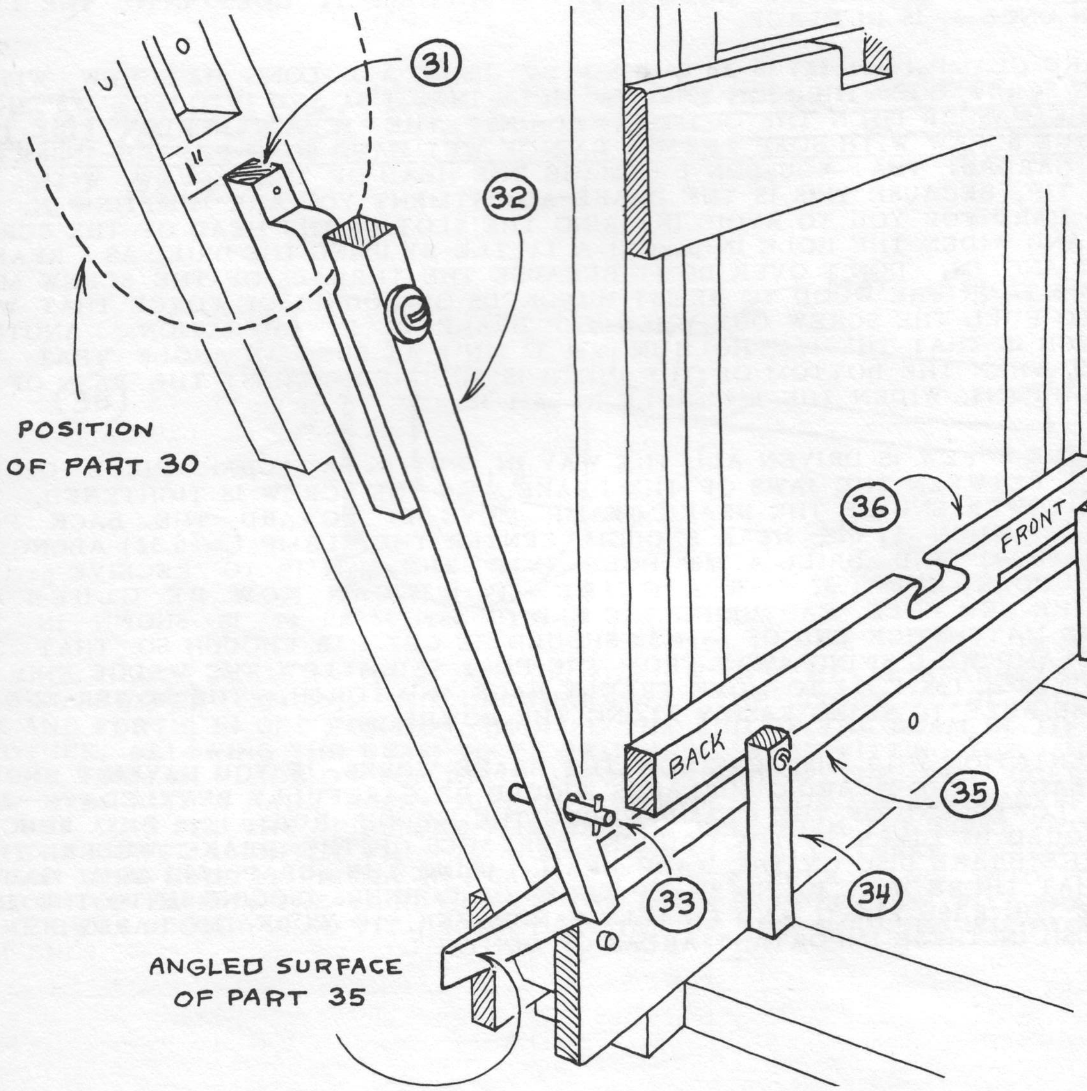
㉟ 3/4" THICK MAPLE

1 REQ.





Part 30 MAY BE FORMED OUT OF SEVERAL MATERIALS, AS INDICATED IN THE MATERIALS LIST, BUT parts 31, 32 and 35 MUST BE MADE OF MAPLE. SOFTWOOD WILL NOT SERVE FOR THESE MEMBERS OF THE BRAKE. Part 33 HAS A 1/8" HOLE DRILLED THROUGH ONE END INTO WHICH IS PUSHED A 3/4" LONG PIECE OF WOODEN MATCHSTICK. THE MATCHSTICK SHOULD HAVE THE STARTING END WHITTLED DOWN A LITTLE AND FIT TIGHTLY IN ITS HOLE. Part 34's CAN BE MADE OF SCRAP FIR — RIPPED OUT TO MEASURE 3/4" x 3/4".



ASSEMBLY OF THE BRAKE STARTS WITH THE JOINING OF part 35 TO part 36 AS SHOWN IN THE DRAWING. NOTICE THAT THE WEDGE SHAPED END IS THE ONE THAT PROJECTS. NOTICE ALSO WHICH SIDE OF THE UNIT HAS THE ANGLED WEDGE SURFACE. FASTEN THE PIECES WITH GLUE AND 3^{d} NAILS, MAKING THE FRONT ENDS EVEN WITH EACH OTHER. DRILL THE MAPLE BEFORE DRIVING IN THE NAILS.

THE NEXT STEP IS TO MOUNT THE TWO part 34's ON THE INSIDE 14, USING GLUE AND TWO 3^{d} NAILS FOR EACH. THE ENDS WITH THE 1/4" HOLES ARE UP AND THE FRONT 34 LINES UP WITH part 7. THE BACK 34 IS POSITIONED SO THAT ITS FRONT EDGE IS EVEN WITH THE FRONT OF part 8. AS YOU CAN SEE FROM THE ILLUSTRATION, THE 35-36 UNIT SLIDES ON TOP OF THE part 14 AND IS RESTRAINED BY THE 34's. THE SLACK BETWEEN THE 35 AND THE part 34's SHOULD BE ENOUGH SO THAT A PAPER MATCH CAN BE SLIPPED BETWEEN THEM. IF IT ISN'T, USE THE WOOD RASP TO SHAVE DOWN THE 34's A LITTLE.

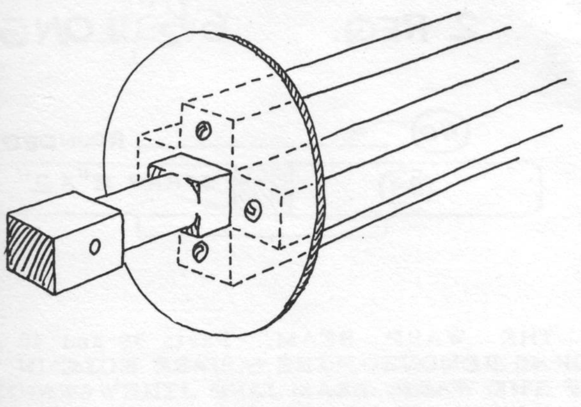
THE BRAKE CONTROL BAR (THE 35-36 UNIT) IS NOW HELD IN PLACE WITH TWO, 2" LONG #10 WOOD SCREWS. THESE GO THROUGH THE 1/4" HOLES IN THE 34's AND INTO 1/8" HOLES WHICH ARE NOW DRILLED INTO THE part 7 AND part 8. THE SCREWS ACT AS KEEPERS, FITTING IN THE SLOTS BETWEEN THE 35 AND THE 36.

Part 31 IS FITTED NEXT, SO REMOVE THE BACK AND CLOTH BEAMS. Part 31 IS CENTERED ON THE INSIDE OF part 19, WITH THE TOP EXACTLY 1" BELOW THE TOP OF THE 19. USE GLUE AND TWO 3^{d} NAILS IN THE 1/16" HOLES. OBSERVE THAT THE END WITH THE NOTCH GOES UP. DEEPEN THE 1/8" HOLE IN part 31 SO THAT IT GOES INTO THE 2"x2" ANOTHER INCH ONCE 31 IS IN PLACE.

THE BRAKE CLAMP (part 32) IS ATTACHED BY USING A 3" LONG #12 SCREW WITH A WASHER. THE SCREW GOES THROUGH THE 1/4" HOLE IN part 32 AND INTO THE 1/8" HOLE IN part 31. THE WASHER IS ON THE OUTSIDE, AGAINST THE SCREW HEAD. FILL THE THREADS OF THE SCREW WITH SOAP FROM A BAR OF WET HAND SOAP BEFORE INSERTING IT. BE VERY CAREFUL THAT YOU DON'T DAMAGE THE HEAD OF THE SCREW WITH THE SCREWDRIVER TIP, BECAUSE THIS IS THE BRAKE ADJUSTMENT YOU ARE PUTTING IN. IF IT TURNS TOO HARD FOR YOU TO AVOID INJURING THE SLOT IN THE HEAD OF THE SCREW, BACK IT OUT AND WIDEN THE HOLE IN part 31 A LITTLE BY USING THE DRILL AS A REAMER AT DIFFERENT ANGLES. DON'T OVER DO IT BECAUSE THE THREADS OF THE SCREW MUST HAVE ENOUGH BITE IN THE WOOD TO RESIST HUNDREDS OF POUNDS OF FORCE THAT WILL BE WORKING TO PULL THE SCREW OUT WHEN THE BRAKE IS IN OPERATION. ANOTHER THING TO WATCH IS THAT THE 1/4" HOLE IN part 32 ISN'T AT SUCH AN ANGLE THAT THE SCREW IS BENT WHEN THE BOTTOM OF THE PIECE IS TOUCHED AGAINST THE BASE OF part 19. IF THIS HAPPENS, WIDEN THE 1/4" HOLE IN part 32.

BEFORE THE SCREW IS DRIVEN ALL THE WAY IN, PUT IN A SCRAP PIECE OF 1/4" (part 30) STOCK BETWEEN THE JAWS OF THE BRAKE. AS THE SCREW IS TIGHTENED, YOU WILL SEE THE LOWER END OF THE BRAKE CLAMP MOVE IN TOWARD THE BACK POST OF THE LOOM. WHEN IT IS NEAR ENOUGH, CENTER THE CLAMP (part 32) ALONGSIDE THE POST (part 19) AND DRILL A 3/8" HOLE INTO THE part 19 TO RECEIVE part 33, USING THE 1/2" HOLE IN part 32 FOR A GUIDE. Part 33 CAN NOW BE GLUED AND DRIVEN INTO THE NEW HOLE, CAPTURING THE END OF part 32 AS IT IS SHOWN IN THE DRAWING. THE MATCHSTICK END OF part 33 SHOULD BE OUT FAR ENOUGH SO THAT THE END OF THE CLAMP WILL SWING AWAY FROM THE POST AND ALLOW THE WEDGE END OF THE BRAKE CONTROL (part 35) TO MOVE FREELY BACK AND FORTH. THE LOWER END OF part 32 MUST BE ABLE TO SWING EASILY ALONG THE DOWEL.

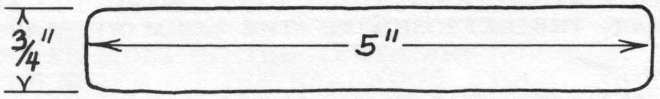
EXPERIMENTATION WILL DISCLOSE HOW THE BRAKE WORKS, IF YOU HAVEN'T UNDERSTOOD IT ALREADY. THE WEARING SURFACES SHOULD BE CAREFULLY BEVELED —— THIS INCLUDES THE LOWER END OF THE CLAMP WHERE THE WEDGE RUBS IT, BUT SPECIAL ATTENTION SHOULD BE GIVEN TO THE GRIPPING SURFACES OF THE BRAKE WHERE THEY WILL TOUCH THE BRAKE DISC ON THE WARP BEAM. USING THE SCRAP 1/4" AS A GAUGE, MAKE SURE THAT THERE WILL BE NO SHARP EDGES OR CORNERS DIGGING IN TO THE DISC (part 30). USE THE RASP FIRST, AND FINALLY SANDPAPER, TO WORK THE HARDWOOD TO A SMOOTH FINISH IN THESE IMPORTANT AREAS OF CONTACT.



Part 30 IS FASTENED TO THE RIGHT END OF THE WARP BEAM WITH FOUR 1 1/2" LONG #12 SCREWS. THE SCREWS GO INTO THE END GRAIN OF THE part 29's. DON'T USE GLUE. BOTH THE WARP BEAM AND BACK BEAM CAN NOW BE REPLACED, WITH part 30 TAKING ITS POSITION BETWEEN THE JAWS OF THE BRAKE. THE WOOD SCREW THROUGH THE CLAMP IS ADJUSTED SO THAT WHEN THE CONTROL BAR (35-36) IS MOVED AS FAR AS IT WILL GO TOWARD THE FRONT OF THE LOOM THE WARP BEAM WILL ROTATE FREELY. WHEN YOU SLIDE THE BAR WITH A LITTLE FORCE IN THE OTHER DIRECTION THE BRAKE SHOULD LOCK HARD ENOUGH SO THAT THE WARP BEAM DOESN'T BUDGE, EVEN UNDER STRESS.

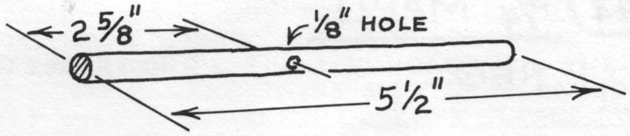
(37) METAL

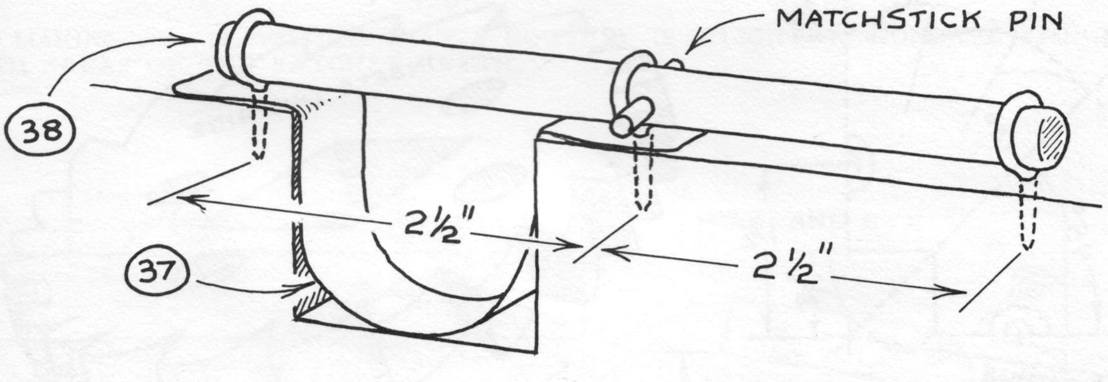
2 REQ.



(38) 3/8" DOWEL

2 REQ.





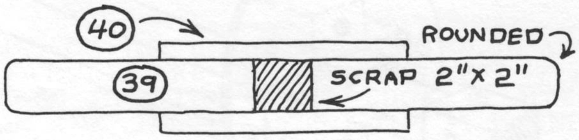
EACH CLOTH BEAM NOTCH IS NOW PROVIDED WITH A METAL BEARING SURFACE (part 37) AND A KEEPER (part 38). THE DRAWING TELLS THE STORY. THE KEEPER SLIDES BACK AND FORTH; IN ONE POSITION, HOLDING THE END OF THE BEAM IN ITS NOTCH; IN THE OTHER, ALLOWING THE BEAM TO BE REMOVED. WHEN FITTING THE METAL STRIP, PUT THE BEAM IN PLACE ON TOP OF IT BEFORE PUNCHING THE TWO HOLES FOR THE SCREW EYES WITH A NAIL. MAKE SURE THE DISTANCES FOR THE SCREW EYES ARE ACCURATE, BUT ALSO SET THE THIRD ONE 1/16" OUT OF LINE WITH THE FIRST TWO. THIS WILL BEND THE DOWEL SLIGHTLY WHEN IT IS ENGAGED WITH ALL THREE SCREW EYES, AND FRICTION WILL HOLD IT FIRMLY IN PLACE. IF THE KEEPER SLIPS INTO THE LOCKED POSITION TOO EASILY, THE VIBRATION OF THE LOOM IN OPERATION WILL SHAKE IT OPEN. THE KEEPERS SHOULD ALSO FIT CLOSELY ON TOP OF THE ROUNDED SURFACES OF THE BEAM ENDS.

㊴ 2"×2"

2 REQ. 6½" LONG

㊵ ½"×1½"

2 REQ. 6½" LONG



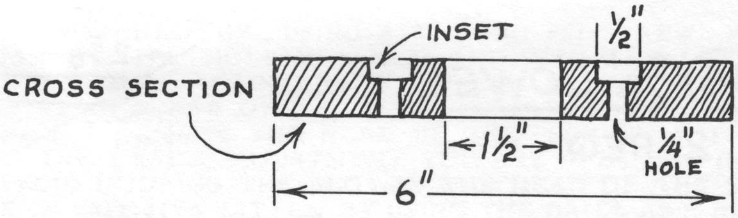
㊶ 3/8" DOWEL

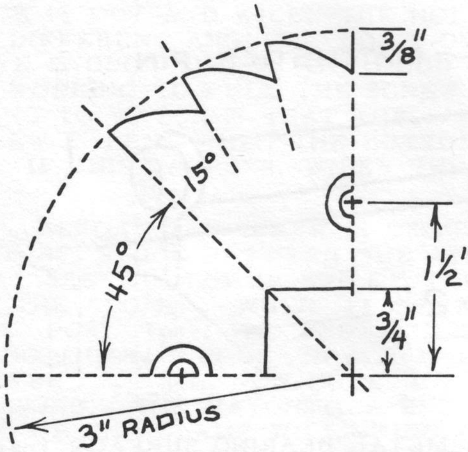
1 REQ. 2½" LONG

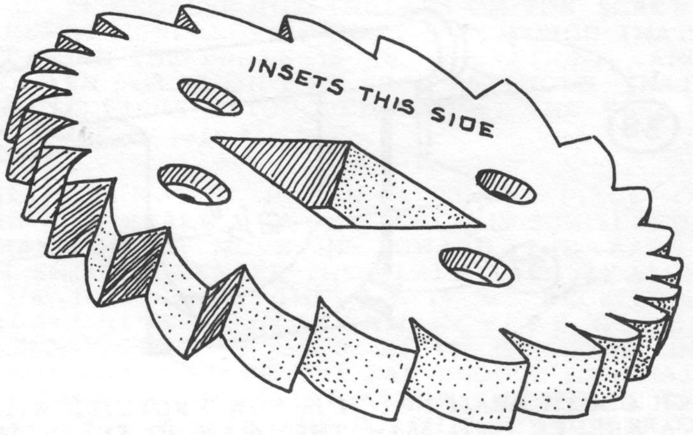
A CRANK ATTACHMENT IS NOW MADE FOR THE WARP BEAM. Parts 39 and 40 ARE ASSEMBLED AS SHOWN. WHEN THE SCRAP BLOCK IS REMOVED, THE SQUARE HOLE IN THE CENTER WILL FIT OVER THE EXTENDING END OF THE WARP BEAM AND THE CRANK IS PREVENTED FROM SLIDING ON TOO FAR BY part 41 WHICH IS DRIVEN INTO THE 3/8" HOLE ALREADY MADE IN part 28. FOR SAFETY, A CRANK HANDLE IS USUALLY LEFT ON THE BEAM ONLY WHEN THE LOOM IS BEING WARPED. THIS ONE FITS NEATLY BETWEEN THE part 14's ON THE LEFT SIDE OF THE LOOM WHEN IT IS NOT NEEDED.

㊷ ¾" MAPLE

1 REQ.

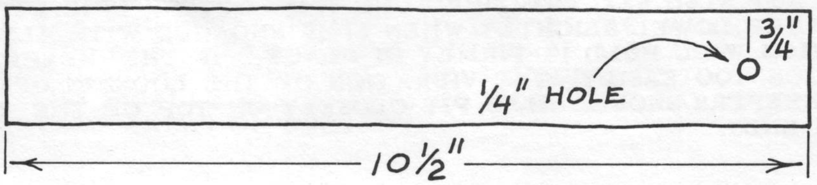






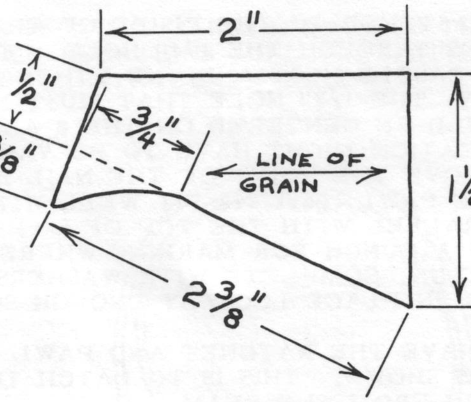
㊸ 1"×2"

1 REQ.



(44) 3/4" MAPLE

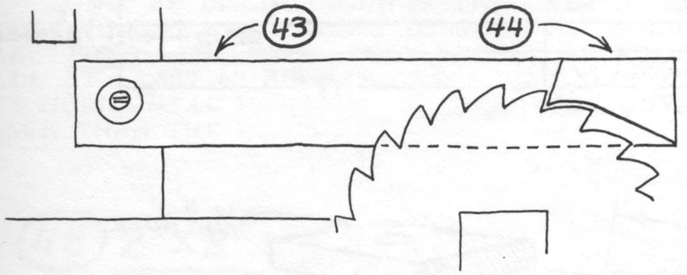
1 REQ.



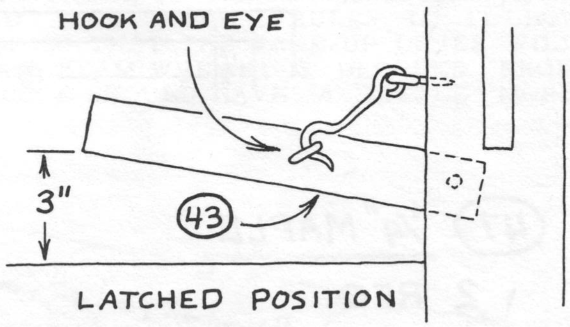
CARE IS ADVISABLE IN MAKING THE TWO HARDWOOD PARTS ABOVE — 42 and 44. THE RATCHET WHEEL WILL TAKE SOME TIME TO MAKE, BUT IT IS AN IMPORTANT PART OF THE LOOM.

ACCURATELY DRAW THE OUTLINES OF THE RATCHET (ALL TWENTYFOUR TEETH, THE CENTERS FOR EACH HOLE AND THE SQUARE CUTOUT) ON A PIECE OF HEAVY PAPER OR BRISTOL BOARD. NOTICE THAT THE OUTER SIDES OF THE TEETH ARE ROUNDED. CUT THE OUTLINE OUT AND USE IT TO TRACE THE SHAPE ON THE HARDWOOD STOCK. NOW DRAW THE SAME OUTLINE ON THE OTHER SIDE OF THE MATERIAL, USING THE SQUARE AND SHARP PENCIL LINES TO INSURE THAT ONE SHAPE IS EXACTLY OPPOSITE THE OTHER, TOOTH MATCHING TOOTH. IT WILL BE A GREAT HELP TO YOU TO HAVE THESE COMPLETE OUTLINES ON EACH SIDE. IN CUTTING THE RATCHET WHEEL OUT YOU CAN USE THE SAW ON THE FLAT SURFACES OF THE TEETH, BUT DO THE FINISHING OF THE ROUNDED OUTER PORTIONS WITH THE CHISEL AND THE WOOD RASP. DRILL THE 1/4" HOLES ALL THE WAY THROUGH FIRST, THEN SINK THE 1/2" INSET HOLES. MAKE THESE JUST DEEP ENOUGH TO HIDE THE HEADS OF THE WOOD SCREWS THAT WILL FIT THERE. OBSERVE CLOSELY WHICH WAY THE TEETH POINT IN THE DRAWING WHICH SHOWS WHERE THE INSETS ARE PLACED. IT IS ESSENTIAL THAT THE FOUR INSETS ARE DRILLED INTO THE CORRECT SIDE OF THE RATCHET WHEEL.

IN MAKING part 44, NOTICE THAT A PORTION IS SLIGHTLY CONCAVE TO FIT THE ROUNDED AREAS OF THE RATCHET TEETH.



INSIDE VIEW



LATCHED POSITION

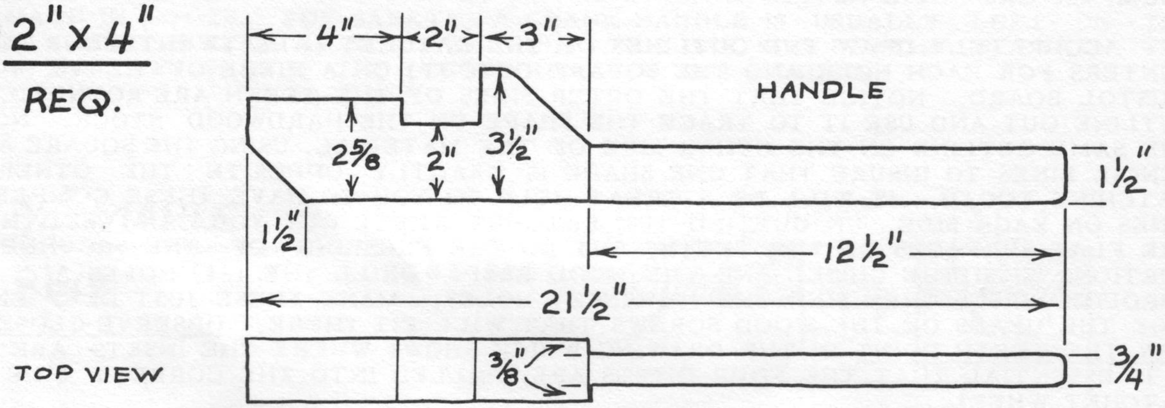
THE RATCHET WHEEL IS MOUNTED ON THE RIGHT SIDE OF THE CLOTH BEAM WITH FOUR 1 1/2" LONG #12 SCREWS WHICH GO INTO THE END GRAIN OF THE part 27's. USE NO GLUE. CHECK AGAIN WITH THE DRAWING ABOVE THAT THE TEETH FACE THE CORRECT DIRECTION. Part 44 IS MOUNTED, AS SHOWN, WITH THE RIGHT ANGLE GOING UP AND FORWARD ON THE END OF part 43. USE GLUE AND TWO 3^{d} NAILS DRIVEN FROM THE part 43 SIDE AND GOING INTO THE MAPLE PIECE.

Part 43 IS FASTENED TO THE INSIDE OF THE CASTLE POST WITH A 2" LONG #10 WOOD SCREW THAT GOES THROUGH THE 1/4" HOLE. TWO WASHERS ARE USED; ONE BETWEEN part 43 AND THE CASTLE POST AND THE OTHER BETWEEN THE HEAD OF THE SCREW AND part 43. IDEALLY, THE 1/8" HOLE THAT MUST NOW BE DRILLED IN THE part 8 TO RECEIVE THE SCREW SHOULD BE CENTERED ON THE 8 AND BE PLACED 2" ABOVE THE TOP OF part 12, BUT THIS LOCATION MIGHT HAVE TO BE VARIED SLIGHTLY. PUT A NAIL IN THE HOLE OF part 43 AND MOVE THE POINT OF THE NAIL AROUND ON THE part 8 UNTIL THE WORKING SURFACES OF THE PAWL (part 44) FIT WELL WITH THE TEETH OF THE RATCHET. TRY TO KEEP part 43 PARALLEL WITH THE TOP OF part 12. WHEN YOU HAVE THE BEST POSITION, USE THE NAIL AS A PUNCH FOR MARKING WHERE TO DRILL THE 1/8" HOLE FOR THE SCREW. THIS IS THEN DRIVEN, COMPLETE WITH WASHERS, TO MOUNT part 43. DON'T TIGHTEN. 43 MUST BE HELD IN PLACE LOOSELY ENOUGH SO THAT IT CAN PIVOT.

WHEN YOU HAVE THE RATCHET AND PAWL WORKING WELL, ADD THE SCREEN DOOR HOOK AND EYE AS SHOWN. THIS IS TO LATCH THE PAWL UP WHEN THE WEAVER WISHES TO UNROLL CLOTH FROM THE BEAM.

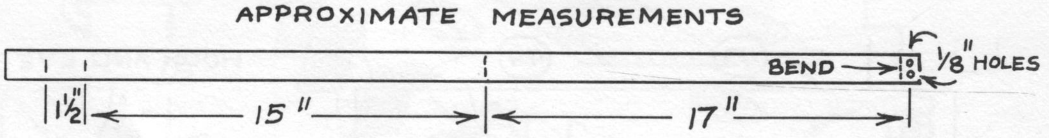
㊺ 2" X 4"

1 REQ.



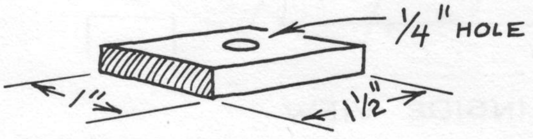
㊻ BELT LEATHER (OR 1¼" WIDE MILITARY WEB BELT)

1 REQ.



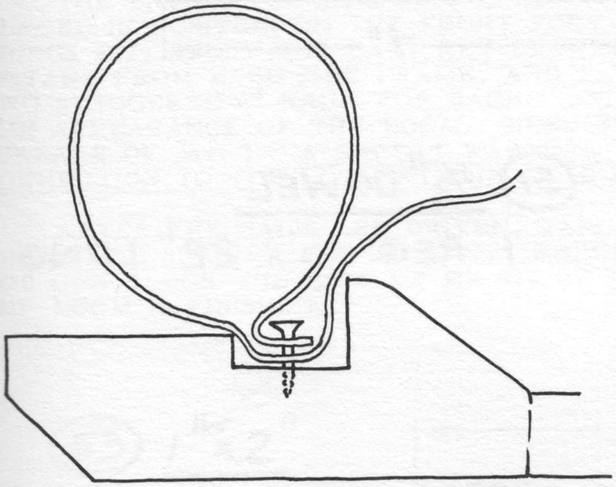
㊼ ¼" MAPLE

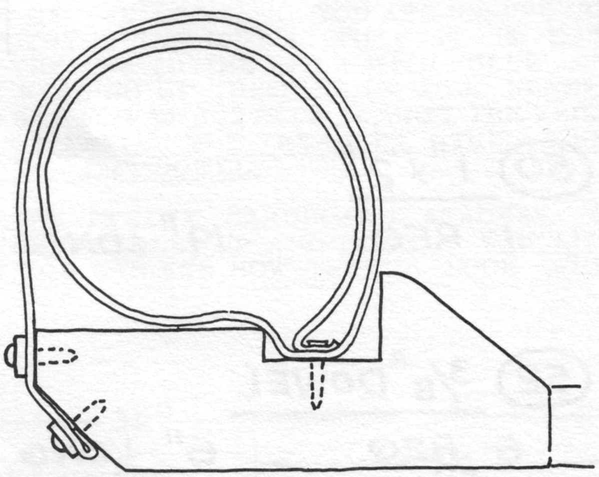
2 REQ.



Part 45 WILL REQUIRE THREE LONG RIP CUTS (CUTS WITH THE GRAIN) WHICH SHOULD BE DONE ACCURATELY, FIRST PENCIL MARKING THE END, TOP AND BOTTOM. THE BEGINNING SAW CUT SHOULD BE ALONG THE TOP OF THE HANDLE WITH THE 45° CUT NEAR THE HEAD. YOU WILL THEN HAVE ONLY HALF AS MUCH MATERIAL TO WORK THROUGH WHEN RIPPING THE SIDES. ROUND THE END OF THE HANDLE TO FIT THE HAND AND SMOOTH OUT ALL SAW MARKS WITH RASP AND SANDPAPER.

EXCEPT FOR THE TWO END HOLES, THE DRILL MARKS SHOWN FOR THE BELT (part 46) ARE ONLY A GENERAL GUIDE. THE PRECISE LOCATIONS WILL VARY WITH THE THICKNESS OF THE LEATHER USED. SEE THE ASSEMBLY INSTRUCTIONS BELOW.



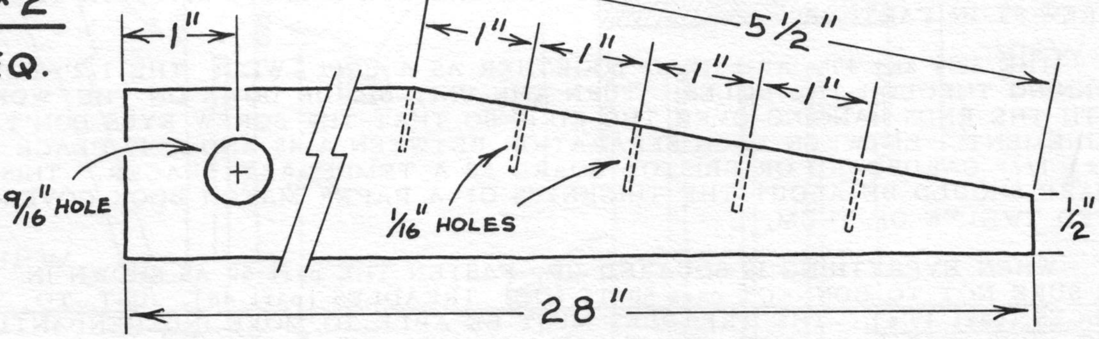


THE FIRST LOOP IS NOW FORMED WITH THE BELT. NOTICE HOW IT IS MADE AND FASTENED WITH TWO 1 1/4" LONG FLAT HEADED WOOD SCREWS (LEFT HAND DRAWING). THE SIZE OF THE LOOP IS IMPORTANT AND MIGHT REQUIRE A NUMBER OF TRIALS. MAKE IT LOOSE ENOUGH SO THAT THE LOOP CAN BE SLIPPED EASILY AROUND THE LEFT END OF THE CLOTH BEAM AND ACROSS TO THE RATCHET SIDE. NOW BRING THE REMAINING LENGTH OF BELT UP AND AROUND THE BEAM AGAIN, ON TOP OF THE FIRST LOOP AND OVER TO THE LEVER END AS IT IS IN THE DRAWING. BEFORE FASTENING WITH TWO 1 1/2" LONG #12 WOOD SCREWS AND THE 47's, EXPERIMENT WITH THE LEVER TO FIND OUT HOW IT WORKS, WHILE HOLDING THE END OF THE BELT IN A TRIAL POSITION. IN OPERATION, THIS KIND OF TAKE-UP DEVICE IS GRASPED BY THE WEAVER AT THE OUTER END OF THE LEVER ARM. THE ARM IS PUSHED TOWARD THE BACK OF THE LOOM TO GET A GRIP ON THE BEAM WHILE THE END OF THE LEVER IS LIFTED TO ROTATE THE BEAM AND ROLL UP THE NEWLY WOVEN CLOTH. THE BEAM DOES NOT ROLL BACKWARD WHEN A NEW GRIP ON IT IS OBTAINED BECAUSE THE PAWL ENGAGES IN THE RATCHET. THE WEAVER PUMPS THE HANDLE UP AND DOWN UNTIL THE WARP HAS BEEN ADVANCED THE DESIRED DISTANCE.

DON'T BE DISCOURAGED IF THE BELT NEEDS A NUMBER OF SMALL ADJUSTMENTS IN ORDER TO GET EVERYTHING TO WORK AS DESCRIBED. TWO GENERAL RULES TO FOLLOW ARE: FIRST, THE INNER LOOP SHOULD BE ADJUSTED SO THAT THE TAKE-UP LEVER WILL FALL AT LEAST 6" BEFORE CATCHING ITSELF ON THE BEAM WHEN IT IS DROPPED FROM THE HORIZONTAL POSITION. SECOND, THE OUTER LOOP SHOULD HAVE A LITTLE MORE SLACK THAN THE INNER ONE.

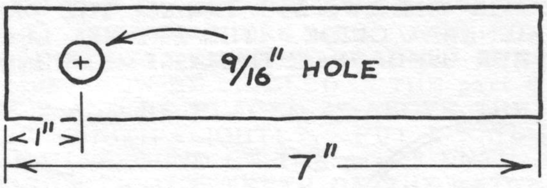
(48) 2"×2"

6 REQ.



(49) 2"x2"

7 REQ.



(50) 1"x2"

1 REQ. 19" LONG

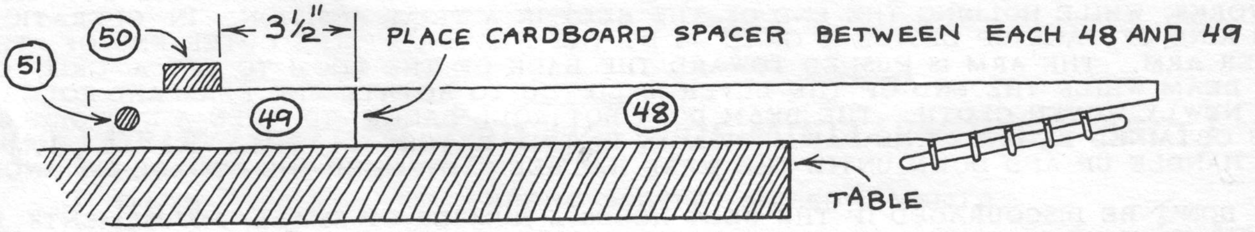
(51) ½" DOWEL

1 REQ. 22" LONG

(52) 3/8" DOWEL

6 REQ. 6" LONG

IN MAKING THE SIX part 48's TRY TO KEEP THE END GRAIN OF THE 2"x2"'s VERTICAL TO THE 9/16" HOLE. BE CERTAIN OF THE POSITION OF THIS LARGER HOLE IN RELATION TO THE ANGLED SURFACE. REMEMBER, ALSO, TO DRILL THE FIVE 1/16" HOLES AT RIGHT ANGLES TO THE ANGLED SURFACE, NOT TO THE LONG AXIS OF THE PART. USE RASP AND SANDPAPER TO SMOOTH THE RIP CUT SURFACES.



PUT IN THE FIVE SCREW EYES THAT GO IN THE END OF EACH part 48. THESE MUST NOT BE SET SO DEEPLY THAT VENETIAN BLIND CORD WILL NOT BE ABLE TO FIT UNDER THE DOWEL (part 52) THAT RUNS THROUGH THEM. THERE SHOULD BE ENOUGH DEVIATION IN ALINEMENT TO PROVIDE THE FRICTION NECESSARY TO HOLD part 52 IN PLACE IN THE SAME MANNER AS WITH THE CLOTH BEAM KEEPERS. HOWEVER, IF THE DOWEL SLIPS SMOOTHLY THROUGH ALL FIVE, BEND THE END EYE ASIDE A BIT WITH THE HAMMER; OR SCREW IT IN FARTHER.

THE 48's and 49's ARE HELD TOGETHER AS A UNIT WITH THE 1/2" DOWEL (part 51) RUNNING THROUGH THE HOLES. TURN THE UNIT UPSIDE DOWN ON THE WORKBENCH TOP WITH THE ENDS HANGING OVER THE EDGE SO THAT THE SCREW EYES DON'T DISTURB THE ALINEMENT. BETWEEN EACH SEPARATION BETWEEN A 48 AND A 49 PLACE A PIECE OF 5"x 1 1/2" CARDBOARD OR BRISTOL BOARD AS A TEMPORARY SPACER. THIS THIN CARDBOARD SHOULD BE ABOUT THE THICKNESS OF A PAPER MATCH BOOK COVER. YOU WILL NEED TWELVE OF THEM.

WHEN EVERYTHING IS SQUARED UP, FASTEN THE part 50 AS SHOWN IN THE SKETCH. BE SURE NOT TO CONNECT part 50 TO THE TREADLES (part 48), JUST TO THE SHORTER PIECES (part 49's). THE TREADLES MUST BE ABLE TO MOVE INDEPENDANTLY. IN MAKING THE JOINS, USE GLUE AND TWO 3^d NAILS WHERE part 50 CROSSES EACH 49. DRILL NAIL HOLES FIRST.

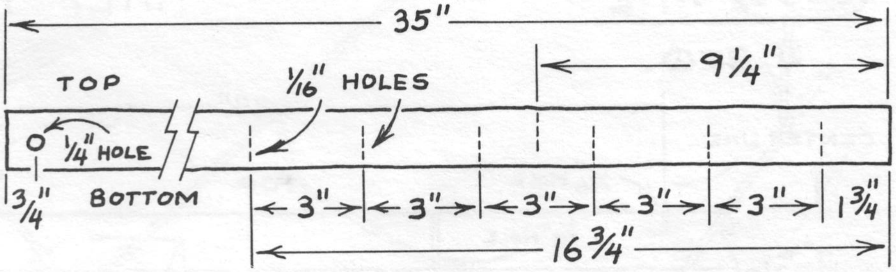
NOW THAT THE TREADLE UNIT IS SECURED, TRIM THE 1/2" DOWEL (part 51) TO SIZE IF NECESSARY. IT SHOULD PROJECT NO MORE THAN 3/4" AT EACH END. DRILL A 1/8" HOLE CLOSE TO THE SURFACE OF EACH END 49, INTO WHICH A MATCHSTICK RETAINING PIN IS PLACED. THE MATCHSTICKS NEEDN'T BE LONGER THAN 1".

THE ENTIRE TREADLE UNIT IS NOW TURNED RIGHT SIDE UP (SCREW EYES UP) AND IS PLACED IN POSITION ON THE FRONT FOOT PIECE OF THE LOOM. IF YOU ARE UNSURE HOW THINGS FIT, STUDY THE PART KEY DRAWINGS. CENTER THE UNIT SO THAT IT IS EQUIDISTANT FROM EACH SIDE FRAME, AND FASTEN THE 49's TO THE part 1 WITH GLUE AND TWO STAGGERED 6^d NAILS FOR EACH. UNIFORM PLACING OF THESE NAILS WILL BENEFIT THE APPEARANCE OF THE LOOM. NEEDLESS TO SAY part 50 BUTTS UP AGAINST THE FRONT SURFACE OF part 1. A REPEAT WARNING: DO NOT FASTEN THE TREADLES. THEIR ONLY CONNECTION TO THE LOOM AT THIS TIME IS BY THE 1/2" DOWEL.

AFTER THE NAILS ARE DRIVEN, TAKE OUT THE TWELVE CARDBOARD SPACERS. GO AHEAD AND SPEND A FEW MOMENTS WORKING THE TREADLES UP AND DOWN IF YOU LIKE. YOU CAN BLOCK THE ENDS UP BY ABOUT 7", SO YOU CAN SEE HOW THEY'LL LOOK WHEN THE LOOM IS FINISHED.

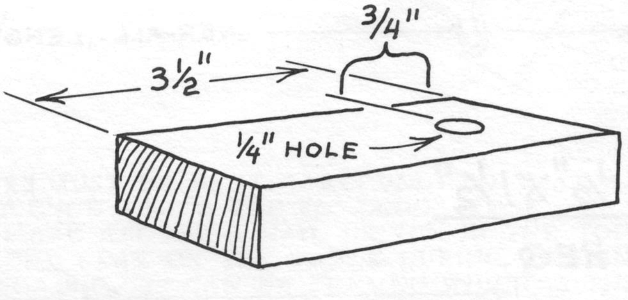
(53) 1"x2"

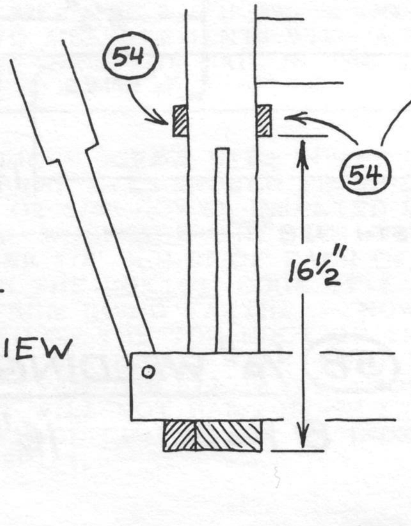
4 REQ.



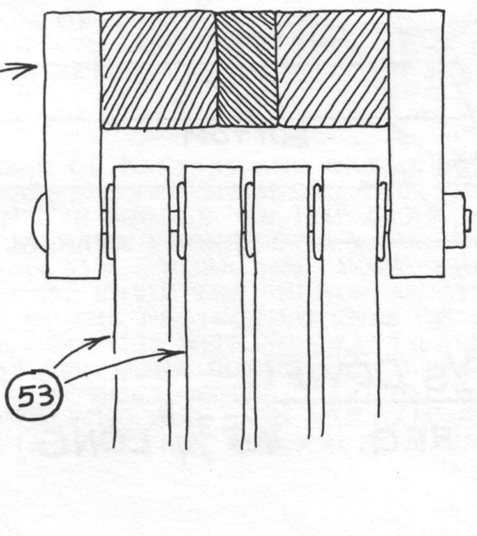
(54) 1"x2"

2 REQ.





LEFT SIDE VIEW



TOP VIEW

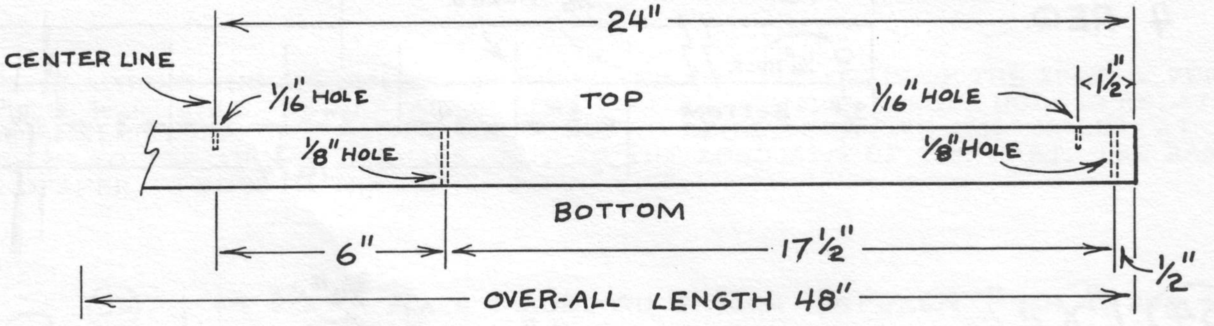
SIX SCREW EYES ARE SET DEEPLY INTO THE BOTTOM OF EACH OF THE FOUR LAMMS (part 53's) WITH ONE #10 CEILING HOOK IN THE TOP. BOTH TYPES OF HARDWARE ARE ALINED CROSSWAYS TO THE LONG DIMENSION OF THE LAMM. THE CEILING HOOKS ARE SCREWED IN ONLY FAR ENOUGH TO BURY THE THREADS. THEY SHOULD THEN HAVE THEIR HOOK OPENING CLOSED MOST OF THE WAY WITH A PAIR OF PLIERS, LEAVING A 1/8" CLEARANCE.

THE LAMM SUPPORTS (part 54) ARE NAILED AND GLUED FIRMLY TO EITHER SIDE OF THE LEFT CASTLE POST (THIS POST IS THE ONE OPPOSITE THE SIDE WHERE THE TENSION CONTROLS ARE). USE A COUPLE OF STAGGERED 6^d NAILS FOR EACH AFTER DRILLING A 1/16" HOLE FOR EACH NAIL. THE BOTTOM OF THE 54's ARE 16 1/2" FROM THE FLOOR.

THE LAMMS ARE MOUNTED AS ILLUSTRATED, WITH A 5 1/2" LONG CARRIAGE BOLT. PUT WASHERS BETWEEN LAMM AND LAMM, AND BETWEEN THE OUTSIDE LAMMS AND THEIR SUPPORTS. DON'T USE A WASHER WITH THE NUT AT THE END OF THE BOLT. YOU WILL WANT THE NUT TO GRIP ONTO THE 54 TO KEEP IT FROM VIBRATING OFF WHILE THE LOOM IS IN USE. THIS LAMM PIVOT BOLT IS NEVER TIGHTENED VERY MUCH OR IT WOULD PULL THE 54's LOOSE.

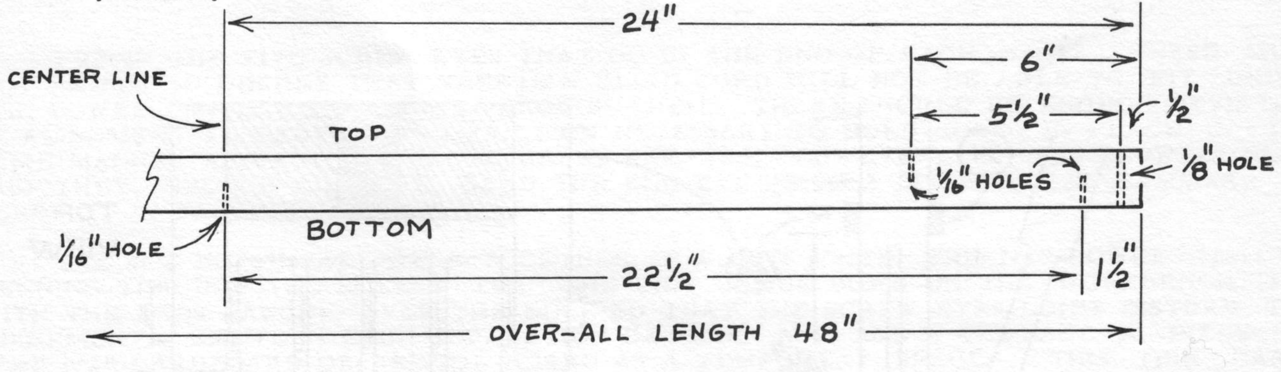
(55) ½" x 1½" HALF PLAN

4 REQ.



(56) ½" x 1½" HALF PLAN

4 REQ.



(57) 3/8" DOWEL

8 REQ. 45¾" LONG

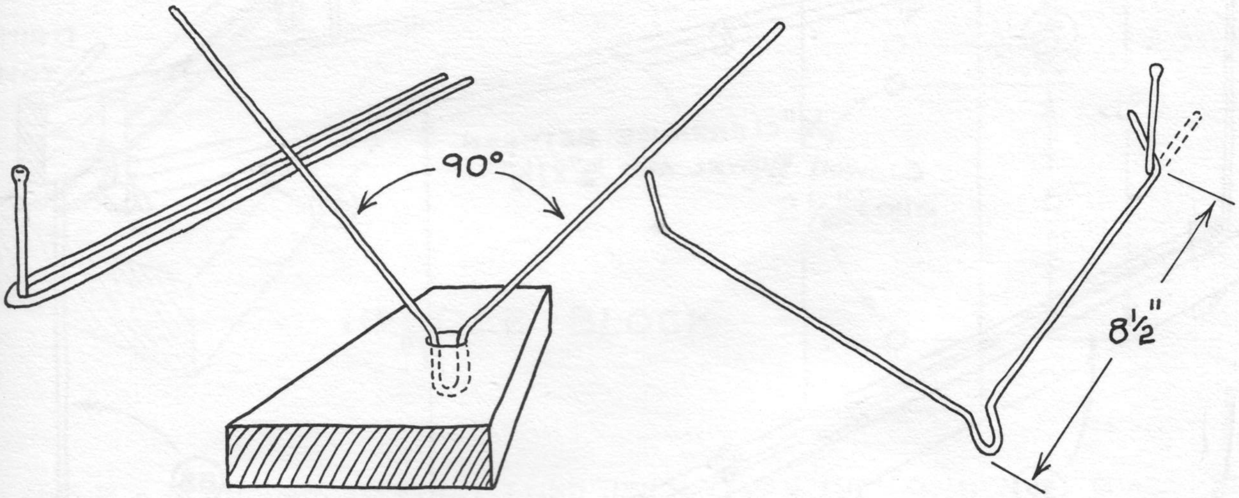
(58) 1/8" WELDING ROD

8 REQ. 16" LONG

㊾ 1/8" WELDING ROD

4 REQ. 22" LONG

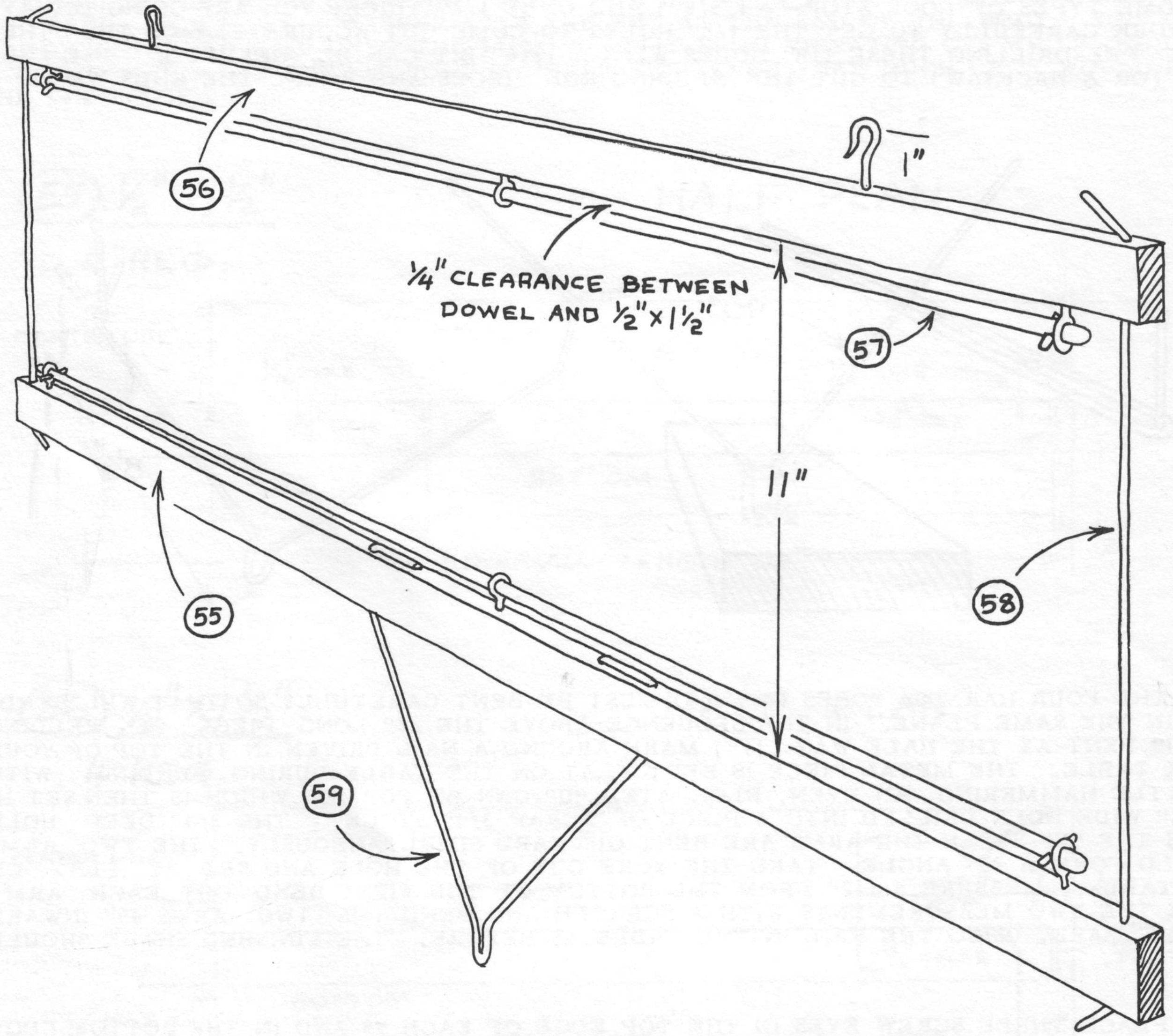
IN MAKING THE WOODEN HARNESS FRAME PIECES (parts 55 and 56) CAREFULLY MARK TOP AND BOTTOM EDGES SO THAT YOU WILL NOT GET CONFUSED. IT WOULD BE A GOOD IDEA TO MARK EACH PIECE WITH ITS PART NUMBER TOO. WHEN DRILLING THE HOLES, REMEMBER THAT ALL HOLES GO INTO THE NARROW EDGE. THE 1/16" HOLES DON'T HAVE TO GO MORE THAN 3/4" DEEP INTO THE WOOD BUT ALL THE 1/8" HOLES GO RIGHT ON THROUGH AND OUT THE OTHER SIDE. SINCE THESE PIECES ARE 1 1/2" WIDE (IN THE CASE OF SOME TYPES OF DOOR STOP — 1 5/8") AND ONLY 1/2" THICK, YOU ARE GOING TO HAVE TO WORK CAREFULLY TO GET THE 1/8" HOLES TO COME OUT ACCURATELY ON THE OTHER SIDE. PRE-DRILLING THESE 1/8" HOLES WITH A 1/16" BIT CAN BE HELPFUL. USE THE FILE (OR A HACKSAW) TO CUT THE WELDING ROD PIECES AND ROUND THE ENDS WELL.



THE FOUR HARNESS YOKES (part 59) MUST BE BENT CAREFULLY SO THAT ALL BENDS ARE IN THE SAME PLANE. IN THE SEQUENCE ABOVE THE 22" LONG PIECE OF WELDING ROD IS BENT AT THE HALF WAY (11") MARK AROUND A NAIL DRIVEN IN THE TOP OF YOUR WORK TABLE. THE METAL PIECE IS KEPT FLAT ON THE TABLE DURING BENDING. WITH A LITTLE HAMMERING, AN EVEN, ELONGATED "U" CAN BE FORMED WHICH IS THEN SET IN A 1/2" WIDE HOLE DRILLED INTO A PIECE OF SCRAP 3/4" STOCK. THE 3/4" DEEP HOLE GRIPS THE "U" WHILE THE ARMS ARE BENT OUTWARD SIMULTANEOUSLY. THE TWO ARMS SHOULD FORM A 90° ANGLE. TAKE THE YOKE OUT OF THE HOLE AND SET IT FLAT ON THE TABLE. MEASURE 8 1/2" FROM THE BOTTOM OF THE FIRST BEND OUT EACH ARM . MARK THE TWO MEASUREMENTS WITH A SCRATCH AND BEND THE TWO ARMS 45° INWARD AT THE MARK, USING THE NAIL IN THE TABLE AS BEFORE. THE FINISHED SHAPE SHOULD LIE FLAT.

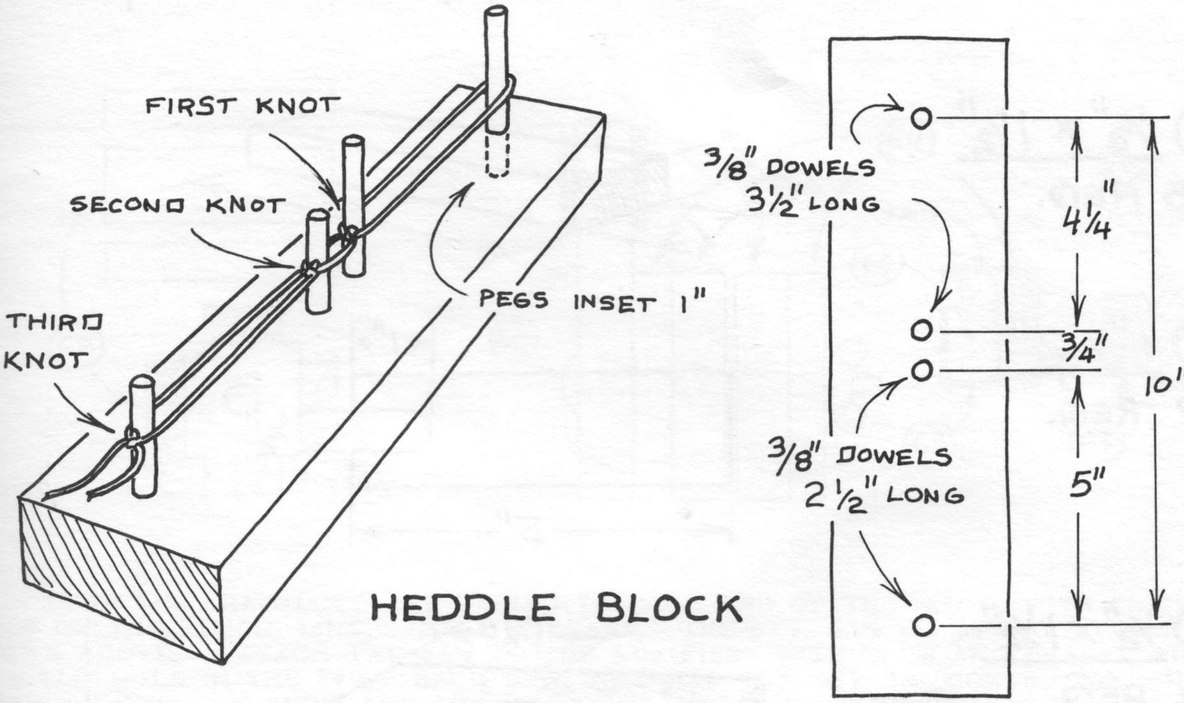
PLACE THREE SCREW EYES IN THE TOP EDGE OF EACH 55 AND IN THE BOTTOM EDGE OF EACH 56. THE EYES SHOULD FINISH CROSSWAYS TO THE MEMBER, AS IN THE DRAWING, AND A SCRAP OF 3/8" DOWEL INSERTED IN EACH EYE SHOULD BE 1/4" AWAY FROM THE OTHER PIECE. WHEN ALL THE EYES ARE PLACED, THE PRONGS OF A YOKE ARE INSERTED INTO THE INNER 1/8" HOLES OF EACH OF THE part 55's. WORK THE YOKE PRONGS INTO THE HOLES ON THE BOTTOM EDGE OF EACH part 55, UNTIL THE BENDS IN THE METAL KEEP THEM FROM GOING FARTHER. NOW BEND IN THE PROJECTING ENDS OF ROD THAT HAVE EMERGED ON THE TOP EDGE OF THE 55's. DO THIS WITH SIDEWAYS TAPS OF THE HAMMER UNTIL THE ROD IS WELL BENT SO THAT THE YOKE DOESN'T MOVE BACK OUT OF THE HOLE BY EVEN THE SLIGHTEST AMOUNT. IF IT DOES, YOU ARE GOING TO HAVE A HARNESS THAT WILL NOT HANG EVENLY. THE WELDING ROD ENDS ARE HAMMERED LEVEL WITH THE SURFACE OF THE part 55, INDENTING IT A LITTLE, BUT NOT TOO MUCH, OR THE WOOD MIGHT SPLIT.

THE HARNESS FRAME IS FORMED IN THIS SEQUENCE: FIRST A part 58 IS INSERTED IN THE TOP OF EACH OF THE TWO OUTER 1/8" HOLES IN A part 55. THEN THE ROD IS WORKED DOWN UNTIL 3/4" PROJECTS BELOW. THE PROTRUDING 3/4" ROD ENDS ARE BENT INWARD 45°, AND FINALLY A part 56 IS ADDED ON TOP. AS YOU SEE IN THE DRAWING, part 56 HAS THE SCREW EYES DOWN, IS POSITIONED 11" FROM ITS LOWER PARTNER, AND HAS THE TOP END OF THE WELDING ROD BENT ABOVE IT. IN BENDING THIS UPPER PORTION OF THE ROD, JUST AS MUCH CARE SHOULD BE TAKEN AS WITH THE YOKE. THE BEST WAY TO INSURE THAT THE 11" DISTANCE IS MAINTAINED IS TO CUT A LENGTH OF SCRAP 11" LONG AND FIT THE SCRAP BETWEEN THE TWO WOODEN PIECES BEFORE HAMMERING THE BEND. AFTER THE FRAME IS FABRICATED YOU WILL NEED TO DO SOME RE-ALINING, BENDING THE RODS SLIGHTLY UNTIL THE FRAME IS SQUARE AND LIES FLAT ON THE TABLE.



TWO HEDDLE BARS (part 57) ARE FITTED TO EACH OF THE FOUR HARNESS FRAMES NOW, USING THE SCREW EYES. MARK THE DOWELS FOR THE DRILLING OF TWO 1/8" HOLES ON THE INSIDE OF THE TWO OUTER SCREW EYES. 3/4" LONG PINS MADE OF MATCH STICKS ARE USED IN THE HOLES TO KEEP THE DOWELS IN POSITION. WHEN HEDDLES ARE PLACED ON THE RODS, THE PINS ON THE DOWEL ENDS OPPOSITE THE ENDS YOU WISH TO FREE ARE THE PINS THAT ARE REMOVED. THE HEDDLE ROD DOWELS THEN SLIDE BACK, FREEING THE ENDS THAT STILL HAVE PINS.

THE TOP OF EACH HARNESS FRAME (TOP OF 56) WILL STILL HAVE TWO 1/16" HOLES WHICH HAVEN'T BEEN USED. FILL THESE WITH THE EIGHT #12 CEILING HOOKS, INSERTING ALL THE HOOKS AN EQUAL DISTANCE (THE TOP OF A HOOK 1" FROM THE TOP OF part 56). THE HOOKS SHOULD HAVE THE POINTS FACING IN. YOU CAN CLOSE THE OPENINGS MOST OF THE WAY WITH A PLIERS BUT LEAVE ENOUGH OPENING FOR A LOOP OF VENETIAN BLIND CORD.



HEDDLE BLOCK

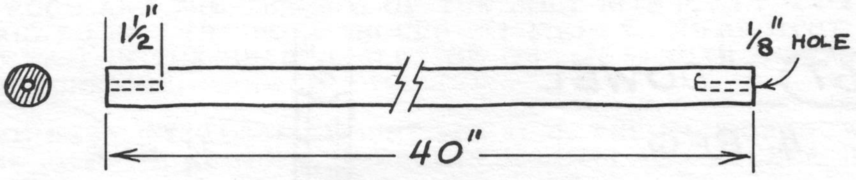
THIS IS A GOOD TIME TO START TYING HEDDLES FOR THE LOOM, AS A SPARE TIME ACTIVITY WHILE THE REST OF THE PROJECT IS BEING FINISHED. THE LOOM WILL NEED A MINIMUM OF 480 HEDDLES; 120 FOR EACH HARNESS — 60 ON EACH SIDE OF THE CENTER SCREW EYE.

THE HEDDLES ARE MADE OF SPEED-CRO-SHEEN, WOUND OFF THE BALL ONTO A FLAT OBJECT, WHICH IS 13" WIDE. WIND SIXTY TURNS, CLOSE TO ONE ANOTHER, THEN APPLY A STRIP OF MASKING TAPE ACROSS ALL THE THREADS. NOW USE A SCISSORS TO CUT THE THREADS IN A LINE PARALLEL TO THE TAPE, AND YOU WILL HAVE SIXTY 26" LONG HEDDLE CORDS. THESE ARE PEELED OFF THE TAPE ONE AT A TIME, TO KNOT THE FIRST GROUP OF HEDDLES.

MAKE A HEDDLE BLOCK OF SCRAP LUMBER AND 3/8" DOWELS TO THE DIMENSIONS SHOWN IN THE SKETCH. EACH HEDDLE IS TIED ON THE BLOCK, USING THREE SQUARE KNOTS. THE FIRST KNOT IS TIED AFTER LOOPING THE CORD AROUND THE TWO TALLER DOWELS. THE LOOP IS PUSHED LOWER DOWN ON THE FRAME, AND THE SECOND AND THIRD KNOTS ARE TIED AT THE TWO SHORTER DOWELS. KEEP AN EVEN TENSION IN TYING HEDDLES, AND MAKE EVERY KNOT AS TIGHT AS POSSIBLE. TO INSURE UNIFORMITY, ONLY ONE PERSON SHOULD DO THE KNOTTING.

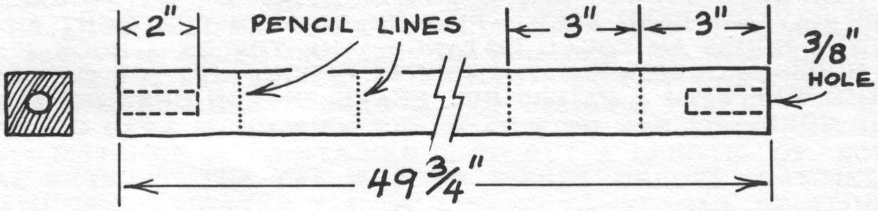
(60) 1" DOWEL

2 REQ.



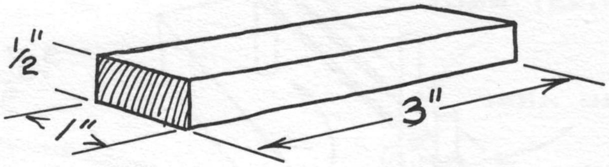
(61) 2" x 2"

1 REQ.



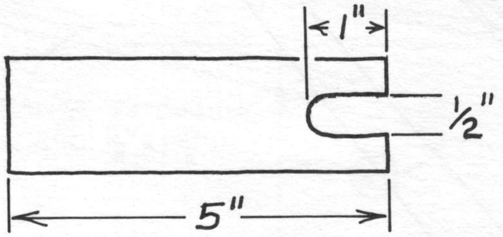
(62) 1/2" x 1 1/2"

8 REQ.



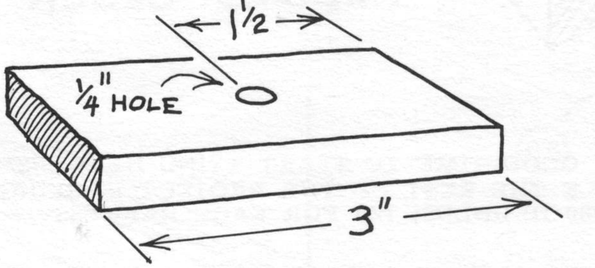
(63) 1" x 2"

2 REQ.



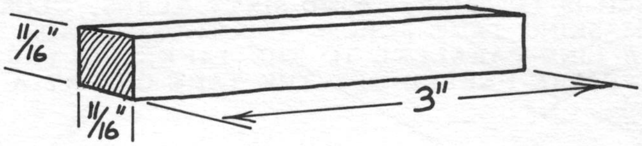
(64) 1/2" x 1 1/2"

4 REQ.



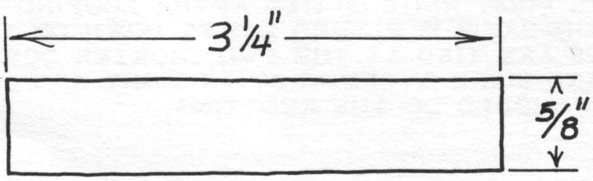
(65) 1" x 1"

4 REQ.



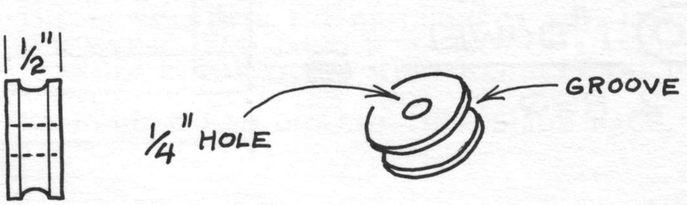
(66) METAL

2 REQ.

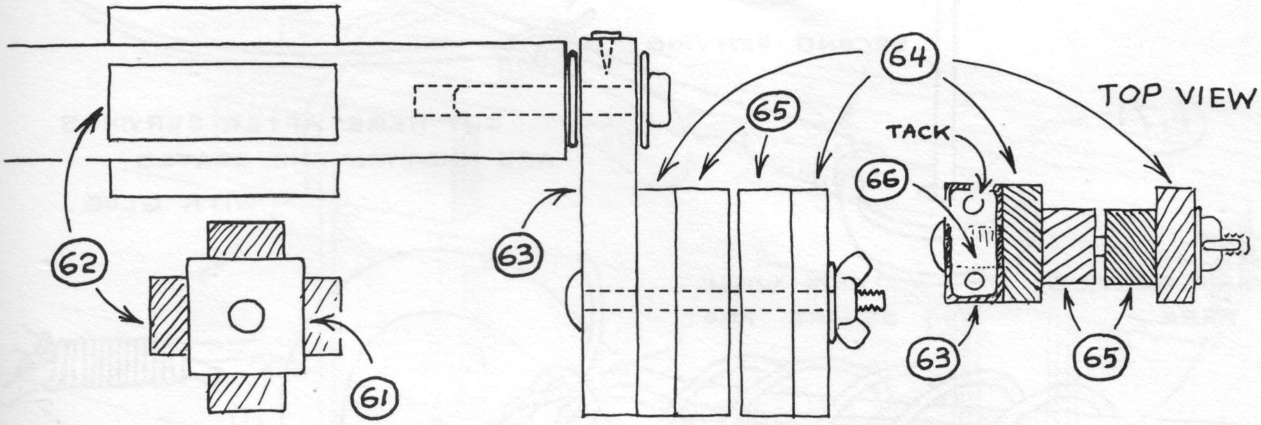


(67) 1" DOWEL

4 REQ.



BEFORE MAKING THE part 60's, FIRST MAKE THE FOUR part 67's FROM THE ENDS OF THE 1" DOWELS. CHISEL OR RASP THE GROOVE FOR A 67, THEN DRILL THE 1/4" HOLE BEFORE CUTTING THE PART OFF THE END OF THE DOWEL. THE HOLES IN THE ENDS OF THE part 60's AND THE part 61 MUST BE AS ACCURATE AS YOU CAN MAKE THEM. Part 62's ARE RIPPED DOWN FROM THE LARGER STOCK. IF THERE IS A ROUNDED EDGE — INCLUDE IT IN THE WASTE. THE 65's CAN ALL BE CUT OUT OF THE SAME PIECE OF 1"x2" BY SIMPLY RIPPING IT DOWN THE CENTER AND CROSS CUTTING TWO 65's OFF THE END WITH EACH CUT.



FOUR 62's ARE GLUED AND NAILED TO EACH END OF THE part 61 WITH THEIR OUTER ENDS ON THE PENCIL LINE. USE 3/4" BRADS. THE 63's, 64's and 65's ARE POSITIONED AS SHOWN ABOVE. ATTACH TWO 64's TO THE 63's FIRST WITH GLUE AND BRADS, THEN USE THE 1/4" HOLE IN THE 64 OF EACH UNIT TO GUIDE THE BIT IN CONTINUING THE BORE THROUGH THE 63's. NOW ADD THE 65's TO ALL FOUR 64's AND DRILL THROUGH THEM AS WELL. Part 66's ARE USED AS BEARINGS IN THE part 63 SLOTS. BEND THE METAL INTO A "U" AROUND A 3/8" MACHINE BOLT AND FIT IT IN THE SLOT, FOLDING THE ENDS OVER THE TOP PORTIONS OF THE WOODEN PIECE. TRIM IF NECESSARY, PUNCH A HOLE IN EACH METAL END AND SECURE IT WITH A TACK. MAKE VERY CERTAIN THAT THERE ARE NO SHARP CORNERS OF METAL.

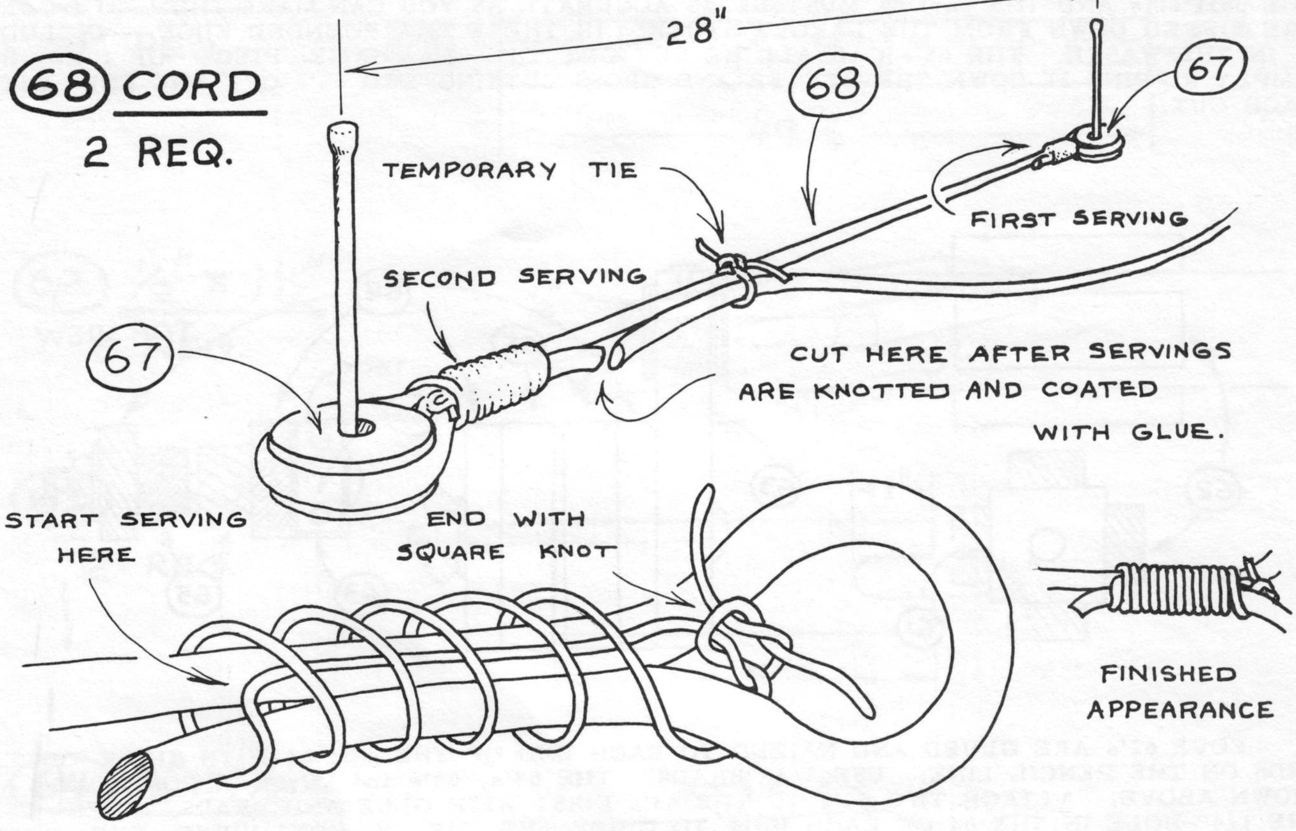
THE ROLLER SUPPORT ASSEMBLIES DESCRIBED ABOVE WILL LOOK LIKE THE SORT OF THING A SIXTH GRADER MIGHT TOGGLE TOGETHER FOR A CLASS PROJECT, BUT DON'T BE DISCOURAGED. WHEN THEY ARE MOUNTED IN THE CASTLE POSTS MOST OF THE SMALLER PIECES ARE HIDDEN AND THE ASSEMBLIES APPEAR WORKMANLIKE AND FUNCTIONAL. USE 4" LONG CARRIAGE BOLTS AND CLAMP THE PIECES AN INCH FROM THE TOP OF THEIR SLOTS, PLACING THE 63's AND THE BOLT HEADS ON THE INSIDE. USE A WING NUT AND WASHER ON THE OUTSIDE.

THERE SHOULD BE ENOUGH SPACE TO FIT THE TOP ROLLER (part 61) AND TWO LARGE WASHERS BETWEEN THE INSIDE SURFACES OF THE 63's. IF THERE ISN'T, RASP DOWN THE 61. THE TWO 3/8" DIA. MACHINE BOLTS ARE FITTED INTO THE ENDS OF THE ROLLER, COMPLETE WITH TWO 3/8" WASHERS FOR EACH BOLT. YOU WILL NOTICE THAT THE BOLT IS RATHER LOOSE IN THE HOLE AND WILL NEED A SHIM. MAKE TWO SHIMS FOR EACH BOLT OUT OF MEDIUM SANDPAPER, CUTTING THE PIECES TO MEASURE 3/8"x2". TO INSET A BOLT, TAKE TWO SHIMS AND FOLD THEM LENGTH-WISE, SO AS TO MAKE A SHALLOW TROUGH, WITH THE COARSE SURFACE FACING OUT. INSERT THEM, ONE TO EACH HALF, INTO THE DRILLED HOLE SO THAT THE BOLT CAN BE THREADED IN AFTER THEM. THE SANDPAPER BITES INTO THE WOOD AND THE THREADS OF THE BOLT BITE INTO THE PAPER BACKING AS THE BOLT IS SCREWED IN. THE BOLT SHOULD FIT FIRMLY AND PROJECT OUT FAR ENOUGH TO BE ABLE TO REST IN THE BEARING SLOT OF ITS part 63 WITH A WASHER ON EACH SIDE OF THE WOODEN UPRIGHT.

AFTER BOTH BOLTS HAVE BEEN INSTALLED, MOUNT part 61 IN THE SUPPORTS WITH THE WASHERS DIVIDED BY THE part 63's. ADJUST THE BOLTS SO THAT THE ROLLER SPINS FREELY.

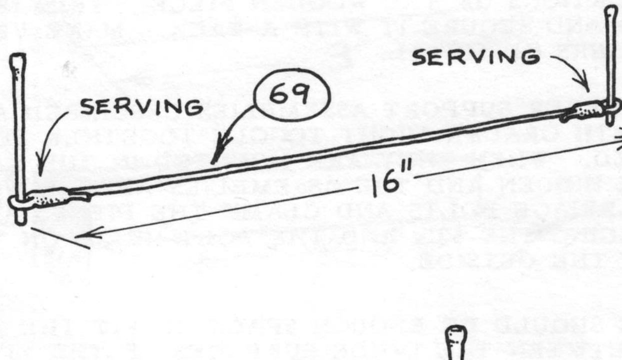
(68) CORD

2 REQ.



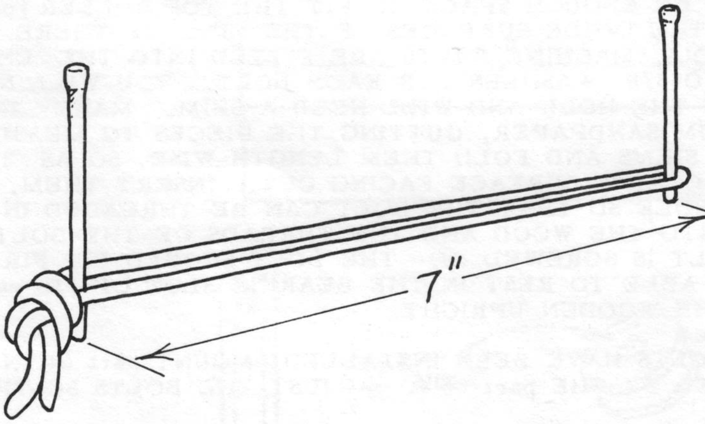
(69) CORD

4 REQ.

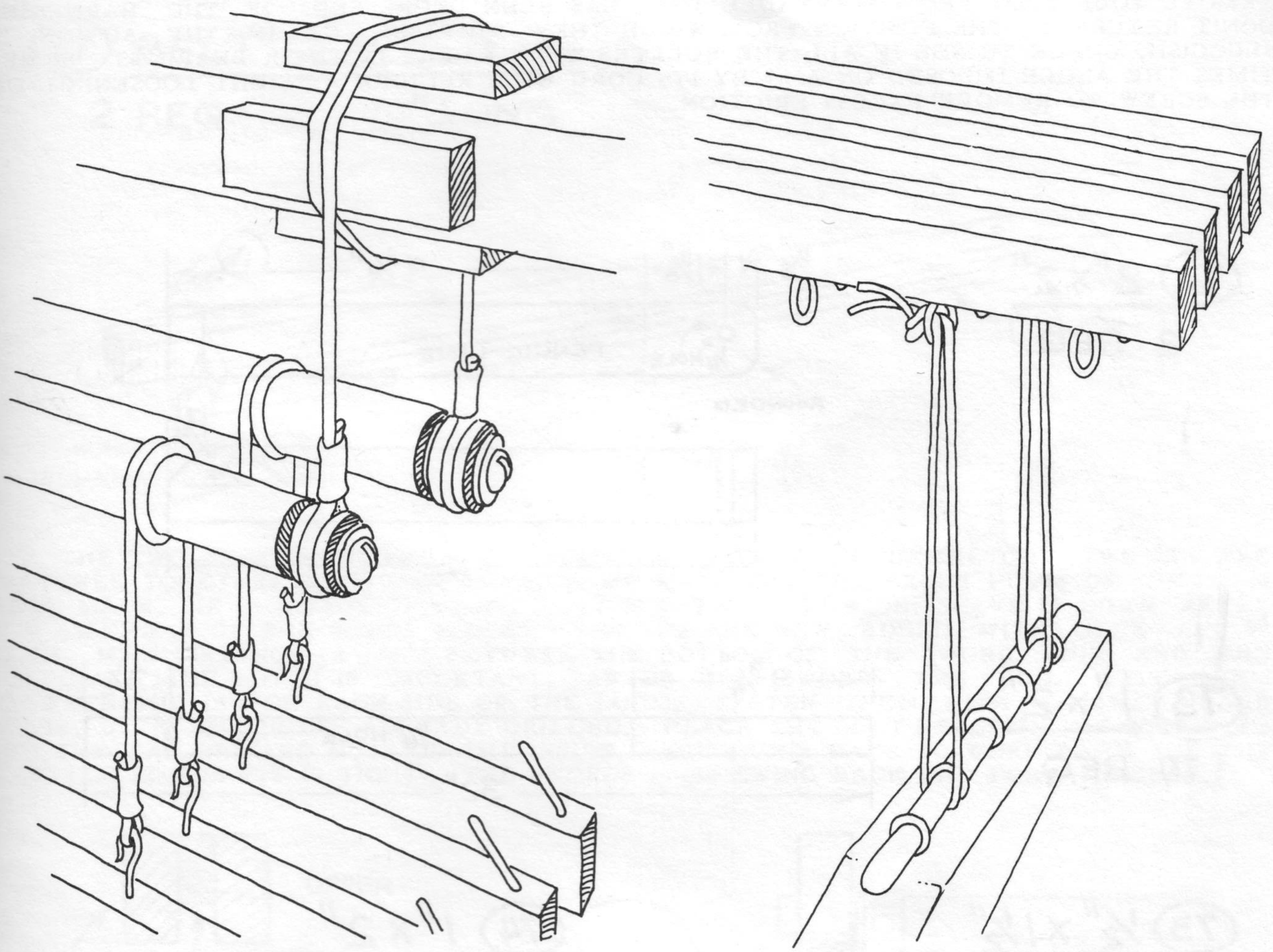


(70) CORD

12 REQ.



Parts 68, 69 and 70 ARE ALL MADE OF #4 1/2 VENETIAN BLIND CORD AND MUST BE MADE ACCURATELY TO THE LENGTHS SHOWN. THE DIMENSION DRAWINGS SHOW THE TECHNIQUE OF USING 6^{d} NAILS DRIVEN INTO THE WORK BENCH TOP. WITH parts 68 and 69, SERVINGS MADE OF SPEED-CRO-SHEEN ARE USED AND ARE WRAPPED TIGHTLY, KNOTTED, AND THEN COATED WITH GLUE. IN THE CASE OF THE part 70's MAKE AN OVERHAND KNOT, WITH THE DOUBLED ENDS AS SHOWN AND USE MACRAMÉ TECHNIQUE TO TIGHTEN THE LOOP SNUGGLY AGAINST THE NAILS. USE PLIERS TO PULL THE KNOT HARD. IF YOU ARE MAKING THE LOOM FOR A TALL WEAVER, THE part 70's CAN BE SIZED 1/2" OR EVEN 1" LONGER THAN THE SPECIFIED 7".



THE SUSPENDING OF THE HARNESSES IS SHOWN IN THE DRAWING. LOOP THE CORD (part 68) ONE AND ONE HALF TIMES TO ENCIRCLE THE 61 and 62's AND MOUNT THE 67's ON THE ENDS OF THE 60's USING FOUR 2" LONG #10 SCREWS. USE A WASHER ON EACH SIDE OF EVERY 67, AND DON'T TIGHTEN THE SCREW SO MUCH THAT THE LONG DOWEL CAN'T TURN EASILY.

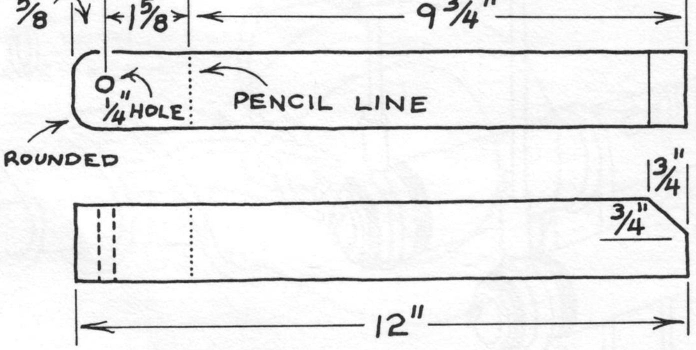
THE BEST PROCEDURE IS TO LAY THE HARNESSES AND ROLLERS ON THE FLOOR AND FIT THE TIES THERE. REMEMBER THAT EACH CORD GOES ONE AND A HALF TIMES AROUND THE ROLLER ABOVE IT. WHEN THE ARRANGEMENT IS MORE OR LESS AS IT SHOULD BE, LIFT THE UPPER ROLLER (61) ALONG WITH EVERYTHING ELSE THAT IS NOW HANGING FROM IT, AND PLACE IT BACK IN ITS BEARINGS IN THE CASTLE, BEING SURE THE LARGE WASHERS ARE WHERE THEY BELONG. HOOK THE LAMMS TO THE HARNESS YOKES, WHICH WILL STABILIZE THE HARNESSES WHILE YOU MAKE FINAL ADJUSTMENTS TO THE CORDS. THIS IS MOST EASILY DONE BY GRASPING A ROLLER WITH ONE HAND WHILE LIFTING UP ON THE SIDE OF THE CORD THAT IS TOO LONG. THE LOOP WILL SLIP AROUND THE RIGIDLY HELD ROLLER, ALLOWING YOU TO EQUALIZE THE LENGTHS OF THE CORD ENDS.

WHEN BOTH HARNESSES AND ROLLERS ARE EVENED UP, PUT IN THE TREADLE TIES. THERE ARE MANY DIFFERENT TIE-UP PATTERNS BUT THE FOLLOWING WILL SERVE FOR NOW. CONNECT THE LEFT HAND TREADLE TO LAMMS 1 AND 2, THE ADJACENT TREADLE TO 2 AND 3, TREADLE 3 TO 3 AND 4, TREADLE 4 TO 1 AND 4, TREADLE NUMBER 5 TO 2 AND 4, AND TREADLE NUMBER 6, THE RIGHT HAND TREADLE, TO 1 AND 3. THIS TIE-UP APPLIES THE MOST COMMONLY USED LOGIC OF HAVING THE TWO TREADLES AT THE WEAVER'S RIGHT PRODUCE THE TABBY SHEDS, THE FOUR TREADLES AT THE WEAVER'S LEFT BEING USED FOR THE PATTERN.

WITH TWO TIES FOR EACH TREADLE THE HARNESSES SHOULD "CENTER" AFTER YOU REMOVE YOUR FOOT FROM A TREADLE THAT HAS BEEN DEPRESSED. IF THE HARNESSES DON'T RETURN TO THE POSITION FROM WHICH THEY STARTED, OR IF THE ACTION IS SLUGGISH, CHECK TO SEE IF ALL THE ROLLERS TURN EASILY IN THEIR BEARINGS. SOMETIMES THE ANGLE IMPOSED ON A 67 BY ITS CORD WILL REQUIRE A SLIGHT LOOSENING OF THE SCREW TO REMOVE EXCESS FRICTION.

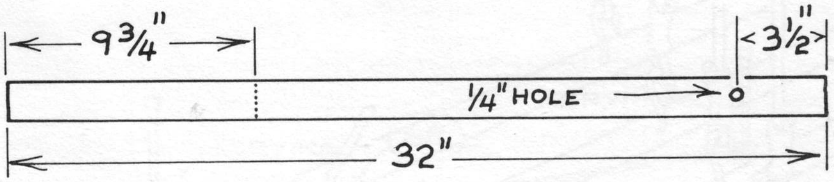
(71) 2"×2"

2 REQ.



(72) 1"×2"

4 REQ.



(73) 1/2"×1 1/2"

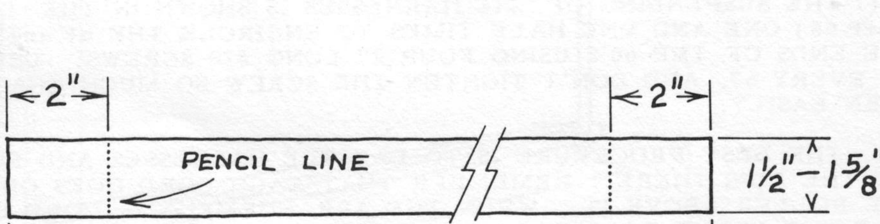
2 REQ. 23 1/4" LONG

(74) 1"×2"

4 REQ. 55 1/2" LONG

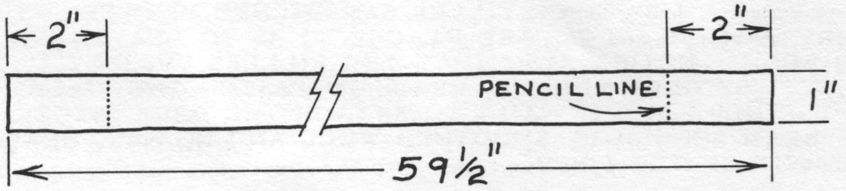
(75) 1/2"×1 1/2"

1 REQ.



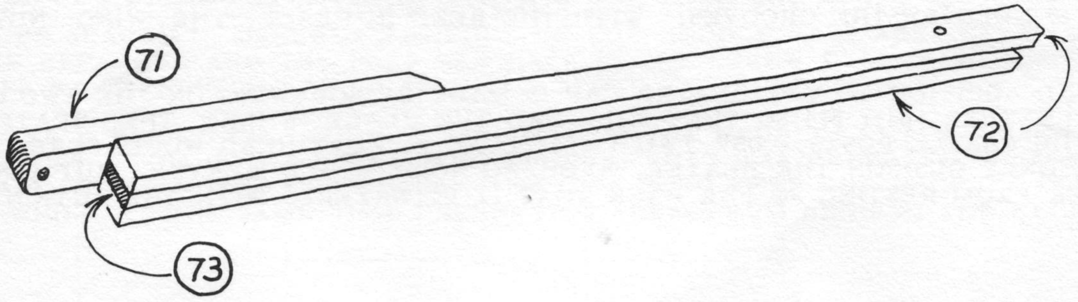
(76) 1/2" X 1 1/2"

1 REQ.

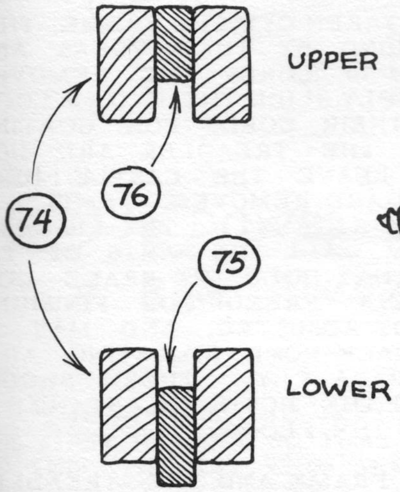


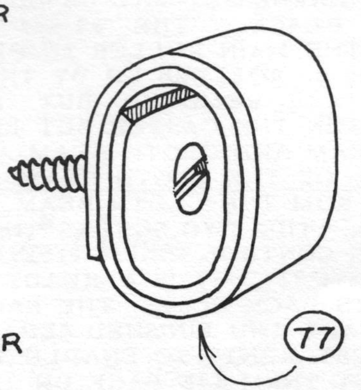
(77) BELT LEATHER

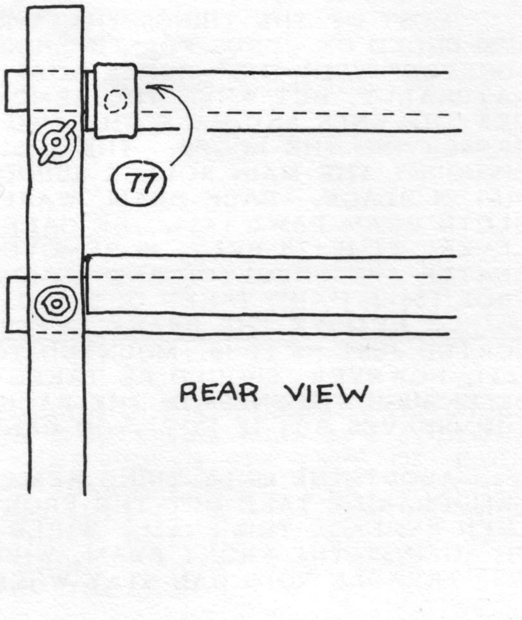
2 REQ. 10" LONG



THE TWO BEATER SWORDS ARE ASSEMBLED AS SHOWN IN THE SKETCH. TWO 72's ARE FASTENED TOGETHER WITH A 73 IN THE SAME WAY THAT THE FRONT POSTS OF THE LOOM WERE MADE. IF THE 73 IS OF STOCK THAT IS OVER 1 1/2" WIDE, SHAVE IT DOWN AFTER THE ASSEMBLY OF THE THREE PIECES. THE 71's ARE NOW ADDED WITH GLUE AND 6^{d} NAILS. THE DISTANCE (2 1/4") BETWEEN THE BOTTOM OF THE SWORD UNIT AND THE BOTTOM OF THE part 71 IS IMPORTANT. AFTER THE SWORDS ARE BUILT, FIT THEM BETWEEN THE 14's ON EACH SIDE OF THE LOOM. FASTEN THEM WITH 3 1/2" CARRIAGE BOLTS, USING THE HOLES ALREADY DRILLED. PLACE THE BOLT HEADS ON THE OUTER 14's AND THE WASHERS AND NUTS ON THE INSIDE. YOU MIGHT HAVE TO WORK DOWN THE 71's A LITTLE IF THE FIT IS TIGHT. THE SWORDS MUST SWING BACK AND FORTH FREELY.







BOTH THE UPPER AND LOWER CROSS BEAMS OF THE BEATER ARE MADE WITH A PAIR OF part 74's, A 1/2" THICK FILLER SANDWICHED BETWEEN THEM. NOTICE HOW THESE FILLERS, parts 75 and 76, ARE PLACED SO AS TO LEAVE A 1/2" DEEP GROOVE IN EACH CROSS BEAM. NOTICE ALSO THAT THE FILLERS PROJECT 2" BEYOND THE ENDS OF THE 1"x2"'s. USE GLUE AND 3/4" BRADS TO FASTEN THE FILLERS TO THE FRONT 74's AND THEN USE GLUE AND 6^d NAILS TO ATTACH THE BACK PIECES. THE TOP OF THE UPPER CROSS BEAM SHOULD BE SMOOTHED WELL AND NO NAIL HEADS SHOULD BE VISIBLE FROM THE FRONT OF THE LOOM.

PLACE THE LOWER CROSS PIECE OF THE BEATER (GROOVE UP) IN THE SLOTS OF THE SWORDS. BUTT THE PIECES HARD TOGETHER AND TIGHTEN THE WING NUTS ON THE TWO 2 1/2" LONG CARRIAGE BOLTS (WITH WASHERS) THAT ARE NOW FITTED IN THE 1/4" HOLES IN THE 72's. THE WING NUTS GO TO THE BACK. TIGHTENING THE BOLTS A LITTLE WILL CLAMP THE CROSS PIECE IN PLACE, ALLOWING YOU TO DRILL ANOTHER 1/4" HOLE THROUGH THE SWORDS. THE HOLES GO THROUGH THE CENTERS OF THE 72's AS WELL AS THROUGH THE CENTER OF THE part 75. TWO MORE 2 1/2" LONG BOLTS ARE PLACED IN THESE HOLES WITH WASHERS AND COMMON NUTS ON THEIR ENDS.

THE UPPER BOLTS (THE ONES WITH THE WING NUTS) MUST BE LOOSENED A LITTLE NOW, SO THAT THE BEATER CAP CAN BE PUT IN PLACE WITH ITS GROOVE FACING DOWN. THE REED IS HELD BY THE GROOVES. WITH THE REED IN PLACE, THE WING NUTS ARE TIGHTENED.

A FINAL ADDITION TO THE BEATER CAP IS MADE BY SCREWING ON THE TWO BUMPER LOOPS OF LEATHER (part 77) SO THEY WILL PAD THE PLACE WHERE THE BEATER CAP TOUCHES THE CASTLE POSTS. USE TWO 1 1/4" LONG #6 FLAT HEAD WOOD SCREWS. THE LOOPS NOT ONLY CUSHION THE BEATER, AVOIDING NOISE WHILE WEAVING, BUT ALSO KEEP THE BEATER FROM RESTING SO FAR BACK THAT IT INTERFERES WITH THE ACTION OF THE HARNESSES.

A LOOM NEEDS A GOOD FINISH SIMPLY TO FUNCTION WELL, TO SAY NOTHING OF THE 50% IMPROVEMENT IN APPEARANCE THAT THE FINISH WILL GIVE.

BEFORE ADDING THE FINISH OF "DEFT", CHISEL OFF ALL RUNS OF GLUE, ERASE ALL PENCIL MARKS AND SAND WITH FINE SANDPAPER ANY AREAS THAT AREN'T ALREADY SMOOTH. AFTER THIS, WIPE EVERYTHING DOWN WITH A CLEAN CLOTH TO REMOVE DUST. BLOCK THE LOOM FRAME UP OFF THE FLOOR WITH SCRAP BLOCK AND SWEEP THE LOWER EDGES CLEAN.

MOST OF THE THINGS THAT ARE REMOVABLE ARE NOW TAKEN OFF THE FRAME, THEN SUSPENDED ON CORDS FOR FINISHING. HARNESSES MAY BE HUNG BY THEIR YOKES AND "DEFTED" WITH THE HEDDLE RODS IN PLACE. THE 69 and 70 CORDS ARE REMOVED, NATURALLY, BUT WHEN YOU REMOVE THE MAIN ROLLER SIMPLY SLIDE THE TWO 68 LOOPS OFF THE ENDS AND HANG THE TWO part 60 ROLLERS UP BY THEIR CORDS FOR COATING, PRESERVING THE LOOPS. THE LAMMS ARE REMOVED BUT THE TREADLES ARE NOT. DISMOUNT THE MAIN ROLLER SUPPORTS IN THE CASTLE BUT LEAVE THE CASTLE BEAM (16) IN PLACE. BACK BEAM, WARP BEAM AND CLOTH BEAM ARE REMOVED, AS IS THE CLOTH BEAM PAWL (43). BE CAREFUL OF THE CLOTH BEAM RATCHET. THE TAKE-UP LEVER, WITH ITS BELT, IS REMOVED FROM THE CLOTH BEAM. ALL THE PARTS OF THE BEATER ARE UNBOLTED AND REMOVED. THE TWO SCREWS THAT HOLD THE BRAKE CONTROL (35-36) ARE TAKEN OUT AND THE CONTROL UNIT ITSELF FREED FOR FINISHING. DO NOT REMOVE THE BRAKE LEVER (part 32). IT IS ALREADY ADJUSTED, AND MAY BE COATED JUST AS IT IS, MOUNTED TO ITS BACK POST. THE BACK POST ADJUSTING ARMS (23), HOWEVER, SHOULD BE TAKEN APART AND FINISHED SEPARATELY. THERE SHOULD BE ENOUGH STIFFNESS IN THE BACK POST JOINTS TO ENABLE THE POSTS TO STAND BY THEMSELVES BUT IF NOT, YOU CAN LET THEM LIE BACK ON THE FLOOR.

ABOUT THE ONLY THING REMAINING WILL BE THE MAIN FRAME AND THE TREADLES. TEMPORARILY TAKE OUT THE FRONT BEAM AND FLIP THE TREADLES OUT TO THE FRONT. THEN REPLACE THE BEAM. WHILE COATING THE TREADLES, YOU CAN LET THEM LEAN UP AGAINST THE FRONT BEAM, WHICH IS THE MOST CONVENIENT WAY OF DOING IT. THE 3/8" TREADLE RODS CAN STAY WHERE THEY ARE.

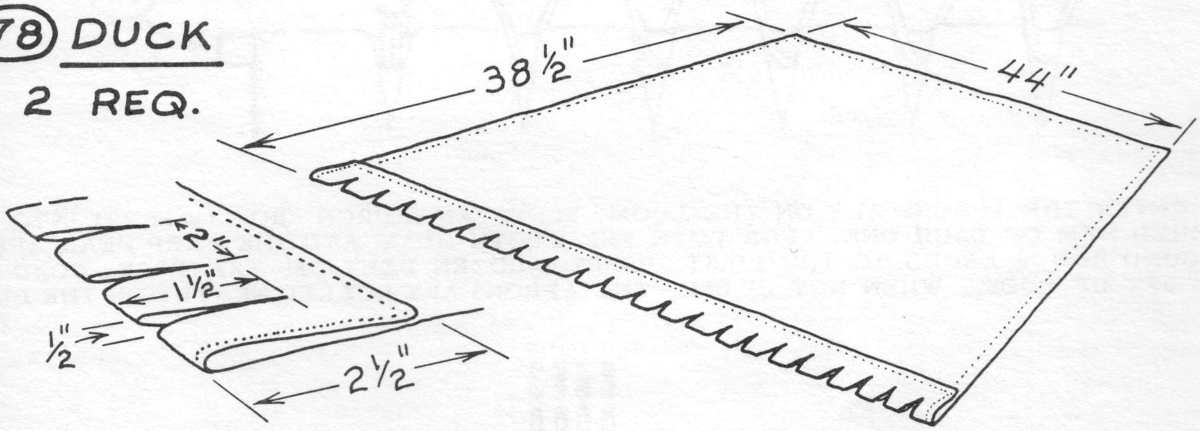
GIVE EVERYTHING A HEAVY COAT OF INTERIOR, SEMI-GLOSS "DEFT" WITH A LARGE BRUSH, COATING THE END GRAIN OF EACH PIECE HEAVILY TO BEGIN WITH, COVERING THE REST OF THE PIECE AND THEN GOING BACK TO LAVISH MORE "DEFT" ON THE END GRAIN AGAIN. THE ONE PORTION THAT IS NEVER COATED WITH DEFT IS THE FIRST FIVE INCHES OF THE END OF THE CLOTH BEAM ON THE SIDE WHERE IT IS CONNECTED TO THE RATCHET. THE TAKE-UP LEVER MUST HAVE BARE WOOD TO GRIP WITH THE LOOPED BELT. IN A WARM PLACE, THE "DEFT" WILL DRY QUICKLY. AFTER IT DRIES, SAND EVERYTHING DOWN WITH FINE SANDPAPER. WIPE OFF THE POWDER WITH A CLEAN CLOTH AND APPLY A HEAVY SECOND COAT OF "DEFT", GIVING SPECIAL ATTENTION TO THE END GRAIN AREAS. AFTER THIS LAST COAT IS DRY, RUB IT DOWN WITH FINE STEEL WOOL. THE FINISH WILL BE A BEAUTIFUL ONE.

WHILE THE REST OF THE LOOM IS BEING RE-ASSEMBLED, AND THE APRONS ARE BEING SEWN AND FITTED, THE HEDDLES CAN BE STRETCHING OUT ON THE HARNESS FRAMES. IN USING FOUR 50 YARD BALLS OF SPEED-CRO-SHEEN TO MAKE THE HEDDLES, YOU SHOULD HAVE TIED APPROXIMATELY 120 HEDDLES FOR EACH FRAME, 60 FOR EACH SIDE. THIS IS THE MINIMUM THAT A WEAVER WILL NEED. IF THE LOOM IS TO BE USED FOR FINE WEAVING THE TOTAL NUMBER OF HEDDLES REQUIRED WILL BE MUCH GREATER, POSSIBLY A THOUSAND OR MORE. SLIDE THE HEDDLES ON THE HEDDLE BARS, END KNOTS DOWN, FIRST FILLING ONE HALF OF A FRAME AND THEN THE OTHER. EACH OF THE LOOPS SHOULD BE SPACED IN ORDERLY FASHION. IF THE HEDDLE BARS ARE BENT WHEN THE PINS ARE REPLACED AND THE BARS ARE BACK IN THE SCREW EYES, EASE THE TENSION ON THE BARS BY TAPPING part 55 UP SLIGHTLY ALONG THE RODS (parts 58).

AFTER A PERIOD OF TIME YOU WILL NOTICE THE HEDDLES GETTING SLIGHTLY LOOSE ON THE RODS. THIS IS THE STRETCHING PROCESS THAT WAS REFERRED TO. THE part 55's WILL HAVE TO BE MOVED OUT AGAIN. THE IDEA IS TO KEEP THE HEDDLES FROM BEING LOOSE, WHILE AT THE SAME TIME PREVENTING THEM FROM BENDING THE HEDDLE RODS.

(78) DUCK

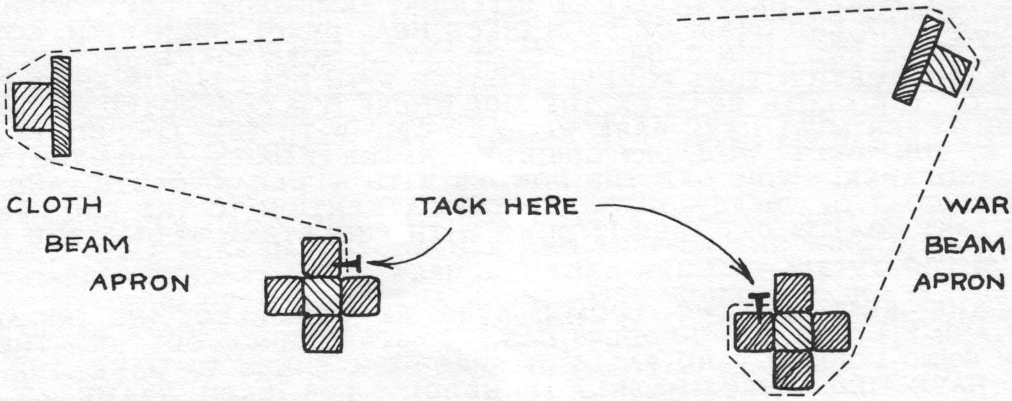
2 REQ.



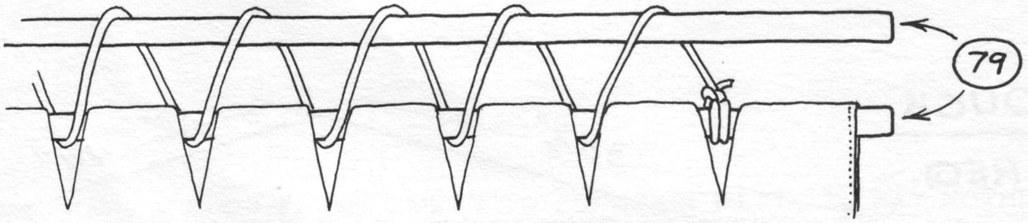
(79) 1/2" DOWEL

4 REQ. 45 1/2" LONG

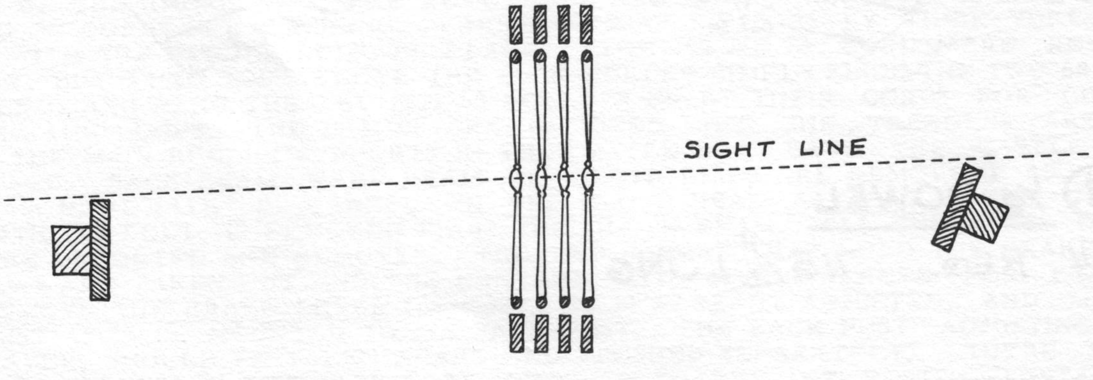
THE APRONS (part 78's) ARE MADE FROM 45" WIDE DUCK CUT 43" LONG. THE SIDES ARE FIRST HEMMED SO THAT EACH OF THE TWO APRONS IS NO WIDER THAN 44". FOLLOWING THIS, THE RAW ENDS ARE FOLDED OVER 1", SEWN, AND ONE OF THE ENDS OF EACH APRON IS FOLDED DOWN AGAIN; 2 1/2" THIS TIME. THE LARGE FOLDS ARE STITCHED STRONGLY TO FORM A 2 1/2" DEEP HEM, THE HEM BEING LEFT OPEN AT THE SIDES. NOW A SERIES OF 1 1/2" LONG "V's" ARE CUT IN THE FLATTENED OUT HEM. THE "V's" ARE 1/2" WIDE AND ARE SET 2" APART, AS THE DRAWING SHOWS. KEEP THE EDGE HEMS INTACT; DON'T CUT ANY "V" WITHIN 2" OF THE SIDES OF THE APRON.



THE APRON ENDS THAT ARE OPPOSITE THE NOTCHES ARE ATTACHED TO THE CLOTH AND WARP BEAMS WITH TACKS. STUDY THE DIAGRAM CAREFULLY AND FASTEN THE APRONS EXACTLY AS SHOWN. FIND THE CENTER OF EACH BEAM RELATIVE TO THE LOOM FRAME AND MARK THIS. THE CENTER OF EACH TACKING EDGE FOR THE TWO APRONS SHOULD BE FOUND AND MARKED, TOO. NOW POSITION AN APRON, MATCHING CENTER MARK WITH CENTER MARK, AND TACK, ONE INCH AT A TIME, OUT TOWARD EACH EDGE SIMULTANEOUSLY, STRETCHING THE FABRIC ONLY SLIGHTLY. WHEN FASTENING THE CLOTH BEAM APRON, BE SURE THAT THE TAKE-UP LEVER IS IN PLACE FIRST!



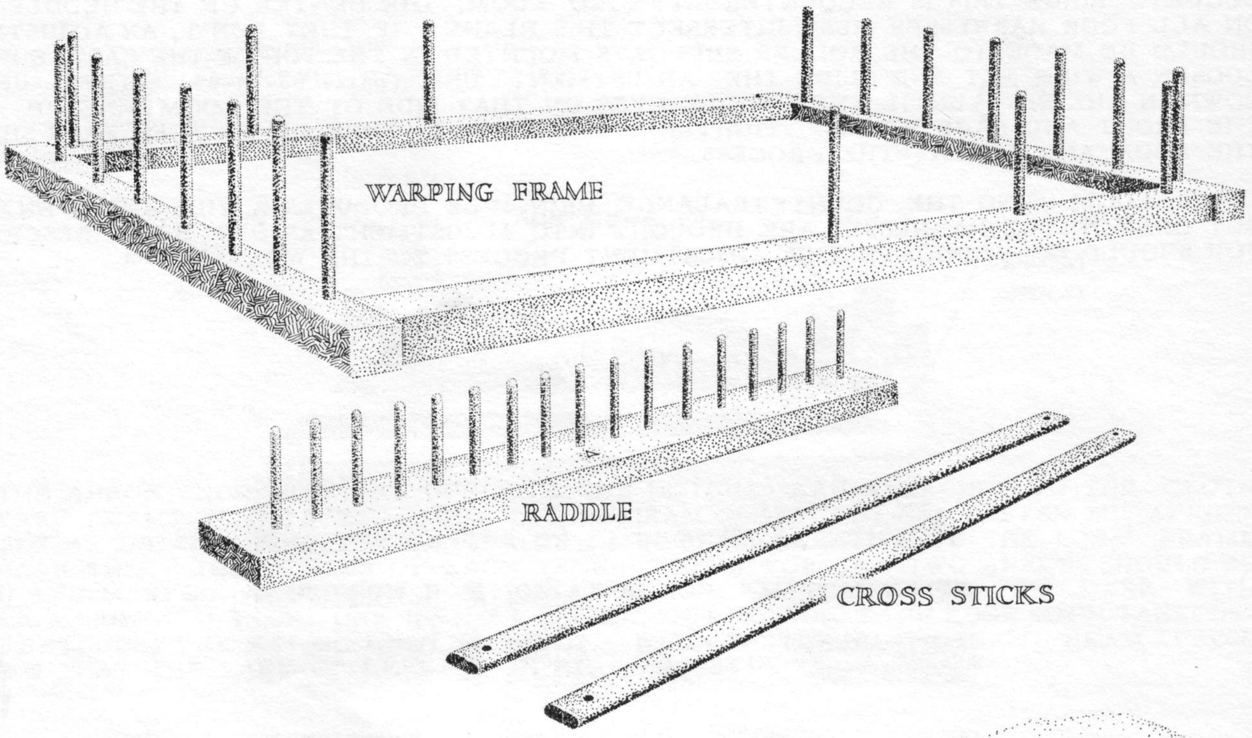
AFTER THE APRONS ARE ON THE LOOM, SLIDE AN APRON ROD (part 79) INTO THE NOTCHED HEM OF EACH ONE. FOR BOTH THE CLOTH BEAM AND THE WARP BEAM APRONS, A SECOND ROD IS LACED TO THE FIRST, USING A DOZEN FEET OF TRAVERSE CORD FOR EACH SET OF RODS. WHEN NOT IN USE, THE APRONS ARE ROLLED NEATLY ON THE BEAMS.

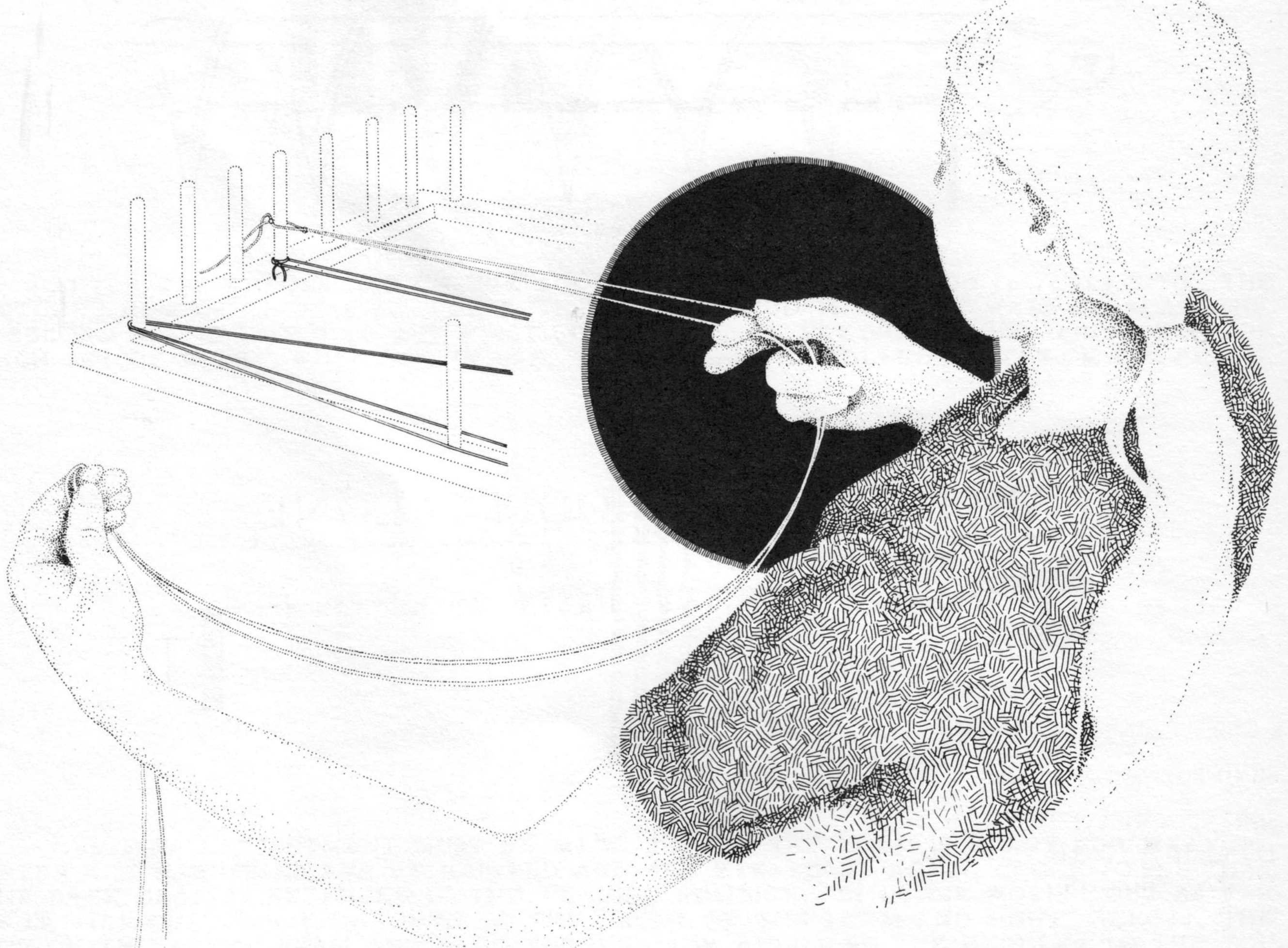


ONE FINAL ADJUSTMENT MUST BE MADE BEFORE THE LOOM IS READY FOR WEAVING. AFTER THE HARNESSES ARE REMOUNTED AND ARE EVENED UP AGAIN, CHECK TO SEE THAT THE BACK BEAM IS EXTENDED IN THE WEAVING POSITION; IN OTHER WORDS, OUT AS FAR AS IT WILL GO. NOW GO AROUND TO THE FRONT OF THE LOOM AND SIGHT ACROSS THE TOP OF THE FRONT BEAM AND BACK THROUGH THE REED AND THE HEDDLES TO THE TOP OF THE BACK BEAM. YOUR EYE WILL BE LEVEL WITH THE PLANE THAT THE WARP WILL

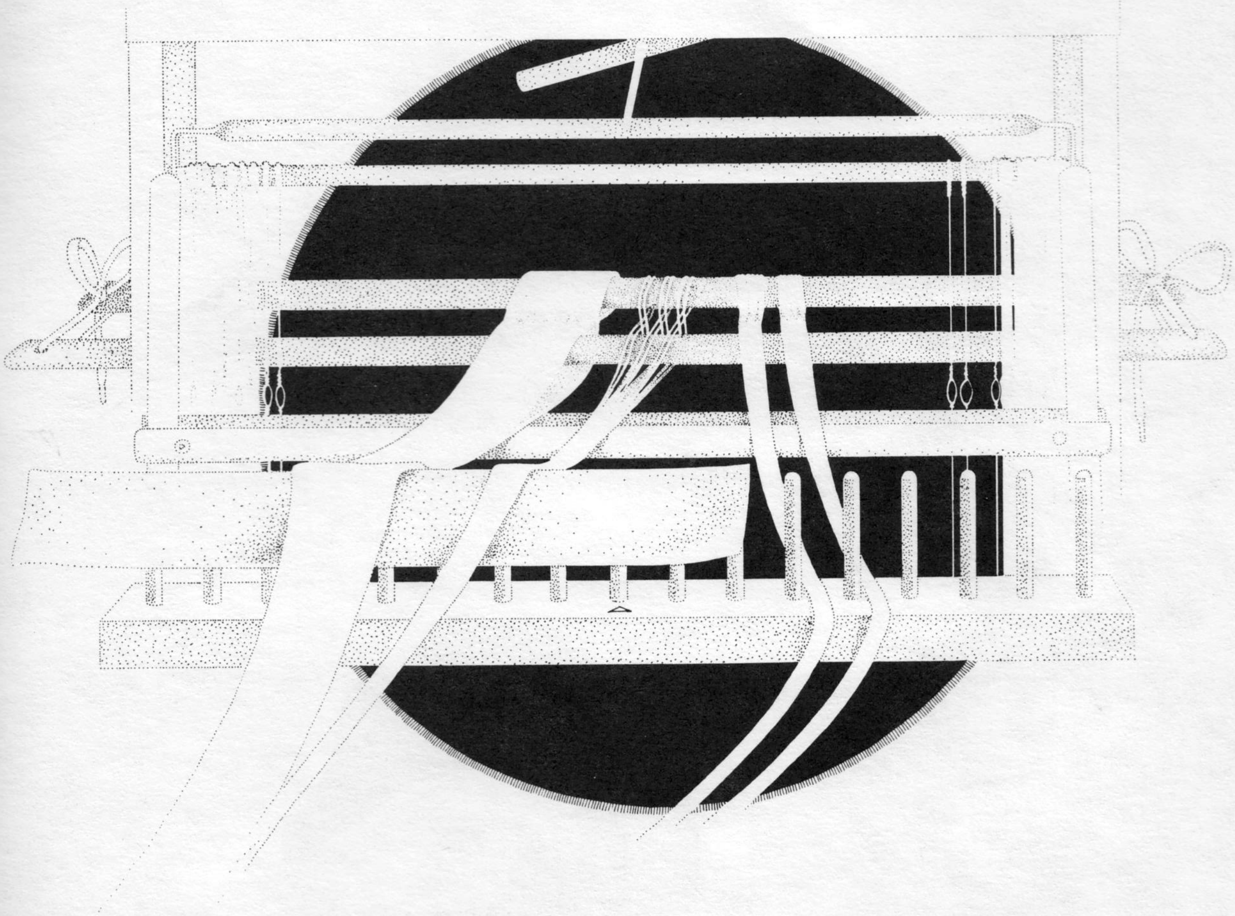
OCCUPY. SINCE THIS IS A COUNTERBALANCED LOOM, THE CENTER OF THE HEDDLE EYES ON ALL FOUR HARNESSES MUST INTERSECT THIS PLANE. IF THEY DON'T, AN ADJUSTMENT SHOULD BE MADE TO THE ROLLER SUPPORTS MOUNTED IN THE TOP OF THE CASTLE POSTS. LOOSEN A WING NUT AND SLIDE THE ADJUSTMENT UNIT (parts 63-64-65) EITHER UP OR DOWN IN THE SLOT UNTIL THE HEDDLE EYES ON THAT SIDE OF THE LOOM LINE UP WITH THE FRONT AND BACK BEAMS. TIGHTEN THE WING NUT, THEN GO TO THE OTHER SIDE OF THE LOOM AND REPEAT THE PROCESS.

A LOOM USING THE COUNTERBALANCE PRINCIPLE PRODUCES A WIDE AND EVEN SHED, BUT ONLY IF THE HARNESSES ARE BROUGHT INTO ADJUSTMENT AS HAS BEEN DESCRIBED. YOU SHOULD COMMUNICATE THIS ADJUSTMENT PROCESS TO THE WEAVER.


WARPING FRAME
RADDLE
CROSS STICKS



> "This book will almost certainly accomplish the fulfillment of its title for anyone. The text is brief and explicit, the diagrams are very clear and well thought-out and related to the text."
>
> HANDWEAVER & CRAFTSMAN



WARPING THE LOOM ALONE

Teressa Folts and David Mathieson

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